Unearthing the power in GMO discourse:

An analysis of Canadian agriculture and agrifood debates

by

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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners. I understand that my thesis may be made electronically available to the public.

ABSTRACT

The overall purpose of this doctoral research project is to add to our knowledge and understanding of power relations embedded in discourses regarding Canadian agriculture and agrifood debates. Power can be obscured by discourse, and discourse infiltrates acts of power. The primacy of scientific knowledge, specifically reductionist versions of modern science, in decision-making on genetically modified organisms (GMOs) is a fitting example; science-based information plays a critical role in safety assessments, while also holding a discursive role in the legitimation of GM technology. As such, we need to take a closer look at acts of speaking and writing about GMOs—the complex, historically embedded context of debating over the benefits and risks of agricultural biotechnology through conversations, publicity materials, news media, and other forums. To achieve this more detailed examination, this thesis examines power relations through a broad, multi-dimensional lens, from the immediate and overt interactions of actors engaging in decision-making processes, to the embedded and amorphous influences of social norms and histories. The overarching research question for this study is: *In what ways do conceptualizations of power and discourse help to further our understandings of disputes over genetically modified organisms in Canada?* This question guides this project through case studies regarding present issues and contexts in Canadian agriculture and agrifood debates, focusing on three different discursive arenas.

First, the thesis examines pro-biotech and anti-biotech discourses to add new insights concerning the power relations embedded in efforts to inform public opinion on the topic of agricultural biotechnology. This analysis highlights the Canadian state's overall positive position toward agricultural biotechnology, which provides leverage to pro-biotech public relations while delimiting anti-biotech campaigns. Further, it illustrates that the potency of pro-biotech frames is sustained by historically and culturally embedded norms and values. These findings uncover a clearer picture of the complexity of power relations within agri-biotech discourse, and the extent to which anti-biotech groups are disadvantaged in these debates.

Second, an analysis was performed on the parliamentary proceedings of Bill C-18, Canada's *Agricultural Growth Act*, which amended several pieces of agricultural legislation. This article contributes to a broader and more integrated approach to exploring the ways in which power dynamics are articulated in law and policy debates. Discourse analysis of 32 parliamentary documents helps to shed light on a range of patterns regarding relations of power and control in the text and context of these debates. Based on this analysis, I discuss the relations of power which work together in an imbricated manner to produce an imbalanced climate for agriculture and agrifood law and policy development—one that prioritizes economic liberalization, global competitiveness, and private property rights.

The third and final case study focuses on news media discourse regarding the introduction of genetically modified alfalfa in Canada. Based on a discourse analysis of 88 news reports on GM alfalfa published over a four year period, this study identifies constitutive power relations that influence the direction of reporting. Specifically, this news coverage is influenced by normative conditions regarding news values and media culture which shape the report writing and editing process, and neoliberal normative assumptions that help to re-embed dominant knowledges regarding market mechanisms and private property rights.

This doctoral research project makes contributions to knowledge through an interdisciplinary analysis of power and discourse in Canadian agriculture and agrifood debates. The three case studies offer substantive empirical contributions to the areas of Canadian agriculture and agrifood studies, particularly regarding GMOs. As an interdisciplinary project, this research contributes to literatures across sociology, environmental studies, science and technology studies, and political science. Furthermore, important insights are developed from the fusion of a four-dimensional power framework with methods of discourse analysis. Future research could benefit from an elaboration of the theory-method approach outlined in this study. Discourses and power relations are co-constructed in varied contexts and necessitate an approach that engages with such dynamics.

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LIST OF ACRONYMS

AAFC – Agriculture and Agrifood Canada
CBAC – Canadian Biotechnology Advisory Committee
CBAN – Canadian Biotechnology Action Network
CBI – Council for Biotechnology Information
CBS – Canadian Biotechnology Strategy
CFA – Canadian Federation of Agriculture
CFIA – Canadian Food Inspection Agency
CPC – Conservative Party of Canada
CSTA – Canadian Seed Trade Association
CWB – Canadian Wheat Board
DFC – Dairy Farmers of Canada
ENP – European Neighbourhood Policy
EU – European Union
FAO – Food and Agricultural Organization
FGI – Forage Genetics International
FSC – Food Secure Canada
GE – Genetically Engineered
GM – Genetically Modified
GMO – Genetically Modified Organism
GP – Green Party of Canada
LIB – Liberal Party of Canada
LMO – Living Modified Organism
MOSST – Ministry of State for Science and Technology
MP – Member of Parliament
NDP – New Democratic Party of Canada
NFU – National Farmers Union
NFU-O – National Farmers Union, Ontario
NGO – Non-governmental Organization
OECD – Organization of Economic Co-operation and Development

OSSI – Open Source Seed Initiative

PBR – Plant Breeders Rights

PNT – Plants with Novel Traits

RSC – Royal Society of Canada

RR – Roundup Ready

rBGH – recombinant bovine growth hormone

SCC – Science Council of Canada

SOD – Saskatchewan Organic Directorate

TNC – Transnational Corporation

UPOV – International Union for the Protection of New Plant Varieties

US – United States

USD – United States Dollar

WTO – World Trade Organization

PREFACE

A brief preface is included here to explain the hybrid style of dissertation presentation being utilized. This is an approach to dissertation presentation not yet common in academia, thus requiring clarification. The following dissertation combines the newer manuscript presentation option comprising three publishable journal-type manuscripts, with elements reflective of a standard dissertation monograph.

Three journal-type manuscripts (Chapters 4–6) based on three separate case studies comprise the empirical component of this dissertation. All three of these chapters are sole-authored manuscripts, and have been submitted to academic journals for publication. Chapter 4, "Pro-biotech public relations versus the anti-GMO movement: An analysis of power and discourse in Canadian agri-biotech debates", has been submitted to *Canadian Food Studies*. Chapter 5, "Debating Bill C-18: An analysis of power and discourse in parliamentary proceedings on Canada's *Agricultural Growth Act*", has been submitted to the *Journal of Canadian Studies*. Chapter 6, "Power, discourse, and news media: Examining Canada's GM alfalfa protests" has been submitted to the *Canadian Journal of Sociology*. The substantive focus on power and discourse throughout these three manuscripts benefits from a detailed introduction of the theoretical and methodological tools employed in this research project. As such, Chapter 2 ('Power as a theoretical approach') and Chapter 3 ('Methods and Data')—though they are elements more commonly found in a standard dissertation monograph—are necessary precursors to the three manuscripts.

Two specific attributes resulting from this style of dissertation are worth noting. First, the three manuscripts (Chapters 4–6) all contain redundancies from the theoretical approach introduced in Chapter 2, and the methods covered in Chapter 3. This information is briefly

repeated in each paper out of necessity. Second, the Conclusion (Chapter 7) includes a discussion of the fusion of power theory and discourse analysis. This section of the concluding chapter is dedicated to self-reflections on the dissertation's approach to examining multiple forms of power through methods of critical and sociological discourse analysis across three case studies. Overall, this hybrid style of dissertation presentation is adopted with the hopes of presenting material in a clear and effective manner, while capturing the approach and perspective from which this study was conducted and written.

CHAPTER 1

INTRODUCTION

In Canada, as it is in much of the developed world, technological developments in the agriculture and agrifood industries are rapid, ongoing, and frequently contested. Genetic modification technologies are no exception. Debates over the risks, necessity, and efficacy of genetically modified organisms (GMOs) involve complex power relations that have important influences on, and interactions with, the discourses that constitute the content and contexts of these debates. The following doctoral research project presents novel contributions to knowledge through three case studies focused on unearthing the varying and interrelated power relations within discourses of Canadian agriculture and agrifood debates. These case studies explore relations of power within a range of discursive contexts: public relations and protest materials on GMOs in Canada; minutes from Canadian parliamentary debates regarding new agricultural laws and regulations; and news media reports on the introduction of genetically modified (GM) alfalfa in Canada. As discourses and power relations can be understood as co-constructed in varied contexts, a specifically designed combination of methods and theoretical concepts are adapted for engaging with these dynamics.

The study of social and political power relations is a central aspect of this research project. Several disciplines—including sociology, political science, philosophy, and science and technology studies—are utilized to develop an approach for examining power relations within Canadian agriculture and agrifood discourses. From the immediate and overt interactions of

actors engaging in decision-making processes, to the embedded and amorphous influences of social norms and histories, the thesis approaches power relations through a broad, multi-dimensional lens. Furthermore, discourses are viewed here as something tangible as well as mutable and influential, and are approached as an ideal space for deploying such approaches to examining varying forms of power relations.

RATIONALE AND OBJECTIVES

The impetus for this study is the widely recognized need, both nationally and globally, for a broader understanding of the risks and benefits associated with GM foods and crops. Many governmental bodies and transnational corporations focus on relatively narrow, science-based assessments of GM products—this is particularly true within countries like Canada and the United States (U.S.) which promote the development of the agricultural biotechnology (agri-biotech) industry. Such assessments have been criticized by activists, politicians, and academics for using narrow, reductionist science (in contrast to more complexity-oriented scientific approaches), and for limiting their overall focus to the potential impacts GMOs may have on human and animal health as well as the environment (see Carr & Levidow, 2000). This focus neglects, for instance, the potential economic impacts on the organic (non-GMO) sector, who risk the loss of certification in instances of GMO contamination, as well as potential ethical differences over the production and consumption of genetically modified foods.

Reports from a Royal Society of Canada (RSC) Expert Panel (RSC, 2001), the Canadian Biotechnology Advisory Committee (CBAC) (2002) and The Polaris Institute (Andrée & Sharratt, 2004) all point to Canada's need for improved regulatory responses to social, economic,

political and ethical concerns regarding agricultural biotechnology. The narrow scope of Canada's system for regulating agricultural biotechnology is also highlighted in academic research (Abergel & Barrett, 2002; Bjorkquist, 1999; Hartley & Skogstad, 2005), which points to the need for a broader, more holistic approach to regulating, as well as understanding and discussing, GMOs. These critiques pushed this research study in directions that appreciate the need for a wider lens. This wider lens opens a window on the issues surrounding GMOs that accounts for both the complexity of scientific debates and the need to consider how these debates play out in society.

Approaching GMOs from this wider, more holistic perspective inevitably led to a variety of ideas, questions, issues, and approaches. Two central concepts stood out in particular: power and discourse. There is a need to explore the sorts of forces that have constrained the regulation and evaluation of GMOs to the reductionist scientific arena. Certain actors, as well as certain discourses, influence the fate of each new GMO, and the agri-biotech industry more generally. That is, power relations have an important role in the debates, ideas, and dialogues about GMOs. This research study takes seriously the acts of speaking and writing about GMOs, and examines the complex, historically embedded context of debating over the benefits and risks of agricultural biotechnology through conversations, publicity materials, news media, and other forums.

Research Question

There has been an uneven global shift toward large-scale farming and genetically modified (GM) crops and foods, accompanied by intellectual property protections, precarious market dynamics, and health and environmental concerns. Canada operates within these global dynamics as it

develops its own agri-biotech industry. As large transnational corporations like Monsanto and Syngenta are developing GM crops for the Canadian market, the Canadian state plays a complicated role of both regulator and backer. Meanwhile, food and farmer organizations as well as the general public take diverging and varied stances on the subject. As such, when new disputes regarding this industry arise, a wide range of actors and positions add to the constantly changing discourses regarding GMOs in Canada. This study takes a closer look at these contexts and discourses, including some recent disputes, in an effort to increase the overall understanding of GMO governance in Canada, and to reveal avenues for limiting scenarios of dominance and imbalance in power relations. The future of GMOs is of vital importance to both Canadian farmers and consumers, yet these actors typically have very different perspectives from those of governments and corporations, and the ways in which GMOs are governed and regulated tends to marginalize these alternative voices. The overarching research question for this study is: *In what ways do conceptualizations of power and discourse help to further our understandings of disputes over genetically modified organisms in Canada?* This question guides the present research project through case studies regarding current issues and contexts in Canadian agriculture and agrifood, and contributes to scholarly literature that grapples with questions regarding the complexity of power relations and the role of discourse within key debates in agriculture and agrifood policy.

This thesis critically examines imbalanced power relations in the context of three different discursive arenas that have been crucial sites of debate: campaign/publicity documents, parliamentary debates, and Canadian news media. More specifically, three topics are analyzed: (1) Canadian pro-biotech publicity and anti-biotech campaign materials; (2) House of Commons and Senate debates over the newly passed Bill C-18, the *Agricultural Growth Act*; and (3) news

coverage of the recent and ongoing disputes over the introduction of GM alfalfa in Canada. Analysis of these three topics points to an array of research findings, including: the ways in which language and discourse can shore up some perspectives, while side-lining others; how the goals and strategies of overtly powerful organizations are imbricated within dominant norms and values; and, how certain discourses exert a form of power without any immediate agency or intent. Power relations, in many forms, are examined in these contexts in order to expose the influences of individual actors, social structures, and historically formed cultural values and normative assumptions.

SUMMARY OF CONTRIBUTIONS

This study makes novel contributions to the study of policies, practices, and discourses associated with agriculture and agrifood, particularly regarding the politics of Canadian agricultural biotechnology. Substantial contributions are made by this study's empirical analysis in each of the three case studies (Chapters 4–6), which add to wider understandings of power in public relations, parliamentary, and news media discourse related to Canadian agriculture and agrifood policy. The empirical findings also add to the research and ideas that policy-makers are able to draw from for decision-making regarding Canadian agriculture and agrifood, and this study's combination of discourse analysis and power theory helps fill gaps in knowledge regarding methods for power analysis. As such, this thesis makes novel empirical contributions to knowledge, and offers valuable insights regarding policy and the pairing of theoretical and methodological approaches.

Empirical contributions are made in each of the three case studies (Chapters 4–6), all of which examine issues of power and discourse in Canadian agriculture and agrifood policy. Based on an exhaustive review of current scholarly literature, each case study represents a novel area of research. Chapter 4 compiles an analysis and direct comparison of pro-biotech publicity materials (from the Council of Biotechnology Information) with anti-biotech campaign materials (from the Canadian Biotechnology Action Network). This chapter produces research findings and conclusions useful for understanding the complex power dynamics (such as the influence of normative assumptions) that are embedded in the language and context of these materials, and points to new directions for campaigning against GMOs. Chapter 5 involves an examination of the minutes of House of Commons and Senate parliamentary meetings regarding Bill C-18, the *Agricultural Growth Act*. This research reveals the range of influences that permeate Canadian parliamentary debates in general and with regard to agriculture and agrifood issues specifically. Finally, Chapter 6 provides an analysis of the news coverage on anti-GM alfalfa campaigns in Canada. This research follows after other media examinations of GMO controversies (see Magnan, 2007), and showcases how certain meanings, ideas, and understandings can be highlighted by news media coverage, while others are veiled. The findings and arguments developed in these case studies offer novel contributions to the study of policies, practices, and discourses associated with Canadian agriculture and agrifood, and also provide valuable assessments of this study's use of discourse analysis to examine varying forms of power.

The present thesis makes these empirical points in the context of a refined theoretical framework on power; valuable insights are developed through an examination of instrumental, structural, discursive, and constitutive power using methods of sociological and critical discourse analysis. A four-dimensional power framework (explained in detail in Chapter 2) is used to

reveal imbalanced power relations and illustrate the complex and varied influences that infiltrate everyday discourses in Canada's agriculture and agrifood sectors. This four-dimensional power typology combines the concepts of instrumental, structural, and discursive power (see Fuchs, 2007; Clapp & Fuchs, 2009) with the concept of constitutive power—which utilizes a Foucauldian informed approach to power (see Digeser, 1992; Haugaard, 2002; Rye, 2014). This approach to power is complemented by methods of discourse analysis. The combination of theory and method utilized in this study offers valuable insights for theorizing and analyzing power relations, particularly in the context of Canadian agriculture and agrifood policy.

Finally, important contributions are made by this project's policy relevance; as the empirical contributions of this project add valuable understandings to the policies and regulations regarding Canadian agricultural biotechnology, important insights can be gleaned for future decision-making in this area. Future policy development could benefit from new understandings of how power relations embedded in varying discourses work to marginalize some actors and ideas, while privileging others. Canadian agriculture and agrifood policy makers should take seriously the ways language use, context, and normative assumptions may promote short-sighted policies and programs that neglect marginalized positions and populations.

THE EVOLUTION OF GMO POLICY IN CANADA

The following is a review of relevant empirical literature that outlines important developments associated with the evolving regulatory and policy contexts of GMOs in Canada. Approaches to understanding, regulating, and otherwise governing agricultural biotechnology in Canada (and globally) involve debates over the possible negative and positive impacts of GM foods and

crops. Potential negative impacts include: toxicity and allergenicity of GM foods (Clark, 2000; Séralini et al., 2012), increased weediness and invasiveness (Clark, 2006), increased vulnerability to pests and climate change by reinforcing genetic homogeneity (Garcia & Altieri, 2005), and market loss from a rejection of GM exports (Eaton, 2011). Potential benefits include: improved biodiversity (Ammann, 2005); reductions in water pollution through decreases in chemical use (Paarlberg, 2009); increased soil fertility through tillage reductions (Ammann, 2008); increased crop yields and efficiency (Berwald et al., 2006); and health benefits from added nutrients (Uzogara, 2000). The risks and benefits of GM crops/foods are both varied, and widely contested. Furthermore, this should be viewed as an important intersection of power and inequality, as the risks and benefits of these technologies are not equally distributed.

A favourable climate for biotechnology in Canada results in different risks and benefits (real and potential) to different populations. To conventional farmers agri-biotech crops may be seen as a valuable new tool for increasing efficiency or tackling unique agronomic and environmental conditions, while organic farmers may see the potential contamination of their crops as a threat to their livelihoods. Furthermore, consumers are also unequally affected by GMO policies, as the costs of organic and non-GMO food choices exclude many low-income populations. At the international level—evidenced through the Cartagena Protocol on Biosafety—countries have seemingly ‘taken sides’ as the development of a global agri-biotech industry largely benefits the countries (mainly the global north) with the capacity to prosper in this sector, while countries lacking in such capacities but rich in genetic diversity (mainly the global South) have less to gain and more to lose (Kleinman & Kinchy, 2007). The risks GMOs pose, and the benefits they provide, have formed a widely engaged discursive arena with a considerable range of issues at stake.

Are technologies like genetic modification increasing the overall risks to agriculture and food consumption, or is the controversy a matter of increased unease and uncertainty among public perceptions? According to Smyth and McHughen (2008) when it comes to agricultural biotechnology, it is largely a matter of increased risk perception, with no empirical evidence of increased risks to human safety or the environment. Conversely, some authors argue that the scope of health and environmental risk evaluation by Canada's regulatory system is too narrow and may overlook more complex and interconnected risks (Clark, 2004). This argument parallels more general assertions that traditional scientific approaches lack the capacity to tackle complex risks (Beck, 2009; Funtowicz & Ravetz, 1994; Gibson, 2005; Stirling, 2007). As debates over the risks and benefits of GMOs continue to gain momentum, the power to influence the overall reception of these contentious products—by farmers, regulators, politicians, the general public, and so forth—becomes essential. The discursive arena of speaking and writing about GMOs has become a powerful component in the debates over their risks and benefits—real or perceived.

In an effort to provide a brief review of relevant literature, the sections that follow focus on three areas of Canadian agriculture and agrifood policy dynamics: seed politics and plant breeders' rights; the development of Canada's agri-biotech sector; and GMO resistance efforts. These three topic areas provide an important, foundational context for this dissertation and help to illustrate the complexity of power relationships that are embedded in these contexts.

Canadian seed politics and plant breeders' rights

Power over seeds—whether it is the right to plant a variety of corn, or breed wheat varieties with a certain genetic trait—is a central aspect in agricultural debates, particularly with respect to

GMOs. Canada's agricultural system has moved away from public and on-farm plant breeding and towards a system of privatization. As Phillips (2013) explains: "moves toward lab-based breeding, expert knowledge, intellectual property rights, genebanking and genetic engineering have been entangled with the building, maintenance and expansion of a corporate seed order through neoliberalisation" (p. 213). These changes have led to a focus on private property, competition and economic growth. Furthermore, neoliberal reforms in agriculture coupled with "the scientization of biotechnology politics" have hampered public debate over these technologies, particularly regarding their social implications (Kinchy, 2012). The critical evaluation of scientific and neoliberal discourses, together, is important to this study as both are embedded in reductionism (see McAfee, 2003). According to McAfee (2003), there is a "double reductionism" in the agri-biotech arena that reduces organisms and their environments to the scientific assessment of 'genes'; a discourse that, in turn, "supports economic-reductionist arguments that genetic information should be patentable and that market-based management of biotechnology will benefit everyone" (p. 2003). These circumstances have meant that the ways in which scientific and expert knowledge are used to inform debates on seed and agricultural politics have become increasingly relevant.

Bronson (2014) points out that it is science communication wherein legitimate expertise takes shape. The case (countersuit) of *Schmeiser v. Monsanto* illustrates how the court system privileges certain knowledges and interests by positioning scientific expertise as more legitimate than other sources of knowledge (Bronson, 2014). In this now landmark case, Saskatchewan farmer Percy Schmeiser filed a countersuit against Monsanto Canada in an ongoing dispute over the unwanted presence of the company's Roundup Ready canola on Schmeiser's GM-free farm; the legal debate, however, pitted scientific knowledge against farmer knowledge. Analyzing the

legal discourse of this case, Bronson (2014) highlights how "the courts discursively constructed clear boundaries separating laboratory-based scientific expertise from other knowledge, thus affirming regulatory assumptions about what constitutes valid regulatory knowledge, and justifying the continued exclusion of publics from biotechnology decision-making" (p. 532-3). Even the language used in the international arena to ensure the right to food is infiltrated by ideas that are bound to assumptions regarding legal relations, progress and development, and an attendance to scientific knowledge in decision-making (Kneen, 2009). Understanding these shifts in seed and agricultural politics is foundational to understanding the dynamics of Canada's current system of agriculture and agrifood governance.

In an effort to historically contextualize this study, this section provides a brief overview of the changing roles and contexts in Canadian seed politics and plant breeder's rights. Reflecting on Friedmann and McMichael's (1989) seminal work on food regime theory, Kuyek (2007b) outlines historical developments within the Canadian seed system through three 'seed regimes' wherein control over seeds moved from farmers to the state and then to corporations. In the initial seed regime (end of the 19th century), decision-making was generally kept at the local level and consisted of farmers experimenting with, selecting, and exchanging seeds (Kuyek, 2007b). Fowler and Mooney (1990) explain that these were the early developments of agricultural diversity through the encouragement and maintenance of specific traits by the first farmers, a practice that has been going on for hundreds of generations. The shift towards state control in Canadian agriculture is partly represented by the establishment of experimental farms from 1886 to 1916 and the delivery of free packets of seeds to farmers to support the improvement of seed varieties, and the 1923 *Seeds Act*, which offered new protections for farmers (Kuyek, 2007b). Following World War II, focus shifted to applying modern science to

increase production and profit (Kuyek, 2007b). The growing connections between seeds and chemicals began around the 1940s, leading to the breeding successes of the green revolution (Fowler & Mooney, 1990). Beginning around the 1980s, the practice of plant breeding shifted from a public to a private enterprise, from a part of farming to a precise and rigorous science (Kloppenburg, 1990; Kuyek, 2007a). Public plant breeding and the free exchange of genetic resources became increasingly dominated by the private/corporate sector (Fowler & Mooney, 1990; Kloppenburg, 1990). As the roles of farmers and plant breeding science shifted and developed throughout the 20th century, so too did the legislation governing these shifts.

Canada began enacting legislation to govern seeds in 1905—originally just for the purposes of seed quality standards (Phillips, 2008). It was not until decades later, however, that legislation protecting the rights of plant breeders was established. Western European governments began negotiating minimum standards for plant breeders rights (PBRs) in the late 1950s, and eventually signed the International Union for the Protection of New Plant Varieties (UPOV) in 1961, later amended in 1978 and 1991 (Kuyek, 2004). In 1978, a bill to establish PBRs in Canada was introduced to Parliament but failed to become law; it was not until 1990 that Canada finally established its own PBR Act, which is based upon UPOV 1978 rules (Kuyek, 2004). For several years it has been the priority of both government and industry in Canada to align PBRs with UPOV '91[1]. With the passage of the *Agricultural Growth Act* in 2015, Canada has now moved to the '91 rules, expanding PBR privileges even further.

[1] In 1998, the federal government introduced Bill C-80, which would have included amendments to the *Plant Breeders' Act* and brought Canada into conformity with UPOV 1991 (Kuyek, 2004). Recommendations to adopt UPOV '91 rules have been repeated since, for example, in the Report of the Standing Committee on Agriculture and Agri-Food titled *Competitiveness of Canadian Agriculture* (House of Commons Canada, 2010).

Kuyek (2007a) warns that "as the Canadian seed system comes further under corporate control, the space for alternatives will diminish and it will become even more difficult to contest the advance of industrial agriculture" (p. 123). What hope is there for public initiatives for seed saving, and other mechanisms for maintaining systems of seed and knowledge sharing in Canada? Phillips (2008) explains that ideas like Seedy Saturdays (organized events for seed swapping, as well as workshops and activities) and the NFU led Seed Saver Campaign represent a disruption of "the logics and practices of the contemporary seed regime in Canada" (p. 16). The Open Source Seed Initiative (OSSI) is another idea which supports "a robust, vibrant and well-supported public and community plant breeding sector producing germplasm and cultivars that can be equitably grown, sold, changed and distributed" (Kloppenburg, 2014, p. 1239). Research on initiatives, like Seedy Saturdays (see Phillips, 2008; 2013) and the OSSI (see Kloppenburg, 2014; Luby, Kloppenburg, Michaels, & Goldman, 2015), offer important insights regarding the redirection of industrialization and privatization in modern agriculture. These types of initiatives instigate and perpetuate ideas and understandings of seeds as a public good to be considered wholly different from other resources and commodities. By continuing to seek out alternatives to the now dominant forms of plant breeding (and food production generally), alternative discourses, ideas, and options for future directions in agriculture are maintained.

The development of Canada's agri-biotech sector

Our current age of biotechnology became a possibility in the 1950s with the discovery of DNA (deoxyribonucleic acid), the genetic map for all living things. By the 1970s, techniques for genetic engineering were being developed. As Andrée (2007) describes it, there were three

forces that fostered the emergence of biotechnology: the surge of investment and promotion around science by the U.S. and United Kingdom following the Second World War; the increasing role of transnational agri-chemical corporations in the global food system, particularly regarding crops with very large markets (e.g., corn and soybeans); and, the commercialization of academic science starting in the 1970s—when venture capitalists teamed up with U.S. scientists to open hundreds of small biotechnology firms. By the early 1980s, techniques were being developed to target and reproduce genes from plants and other organisms (like bacteria), and eventually to transfer genes from one organism to another—these techniques created the first transgenic, or 'genetically modified' organisms (Stewart, 2004). Canada's agri-biotech sector developed in parallel, with a supportive government and eager industry.

A prominent theme in Canadian agri-biotech literature is the identification and critique of Canada as both committed to supporting progress in biotechnology and charged with regulating its safety (Abergel & Barrett, 2002; Magnan, 2006; Prudham & Morris, 2006). As Prudham and Morris (2006) explain, countries like Canada and the U.S. that supported biotechnologies long before developing regulations and consulting the public, effectively positioned the commercial production of GMOs as a *fait accompli*. Consultation initiatives regarding the improvement of GM food regulations came several years after the first commercial releases of GM foods/crops, essentially negating any possible directions wherein Canada does not continue to develop and regulate GM products. Adding to the problematization of this conflicting dual role, Abergel and Barrett (2002) argue that the sequence of policy developments wherein research support preceded the regulatory framework has contributed to a more favourable and supportive view of agricultural biotechnology in Canada. The push for innovation in the area of agricultural biotechnology may be contributing to Canada's narrow safety assessments and limited public

consultations (Abergel & Barrett, 2002). Canada's role as promoter and regulator of GM crops illustrates the convoluted nature of 'science-based' risk assessments intertwined with political economic interests. As of 2015, Canada ranks within the top four producers of GM crops by land area (James, 2015). What other historical and political contexts help explain Canada's commitment towards agricultural biotechnology?

Biotechnology policy development in Canada began with a strong commitment to economic, technological and scientific progress, while state sanctioned evaluations from experts and the public followed many years later. In 1979 the Science Council of Canada (SCC) released its 29th report, *Forging the Links: A Technology Policy for Canada* (SCC, 1979). The ideological underpinnings of technological progressivism are evident in this report. Capturing this position, the final sentence of the SCC (1979) report reads:

> Only by rebuilding the Canadian economy, in part, through an industrial strategy stressing technological sovereignty, will Canadians be able to meet international competition effectively (p. 56).

Committees, strategies, a task force, and considerable funding for biotechnology followed this report throughout the 1980s and 1990s, reflecting this endorsement of economic and technological progress. The Canadian government has been developing policy regarding biotechnology since the 1980s, policy which has supported the promotion and development of biotechnology (Abergel & Barrett, 2002; Kneen & Kuyek, 2002). There are several notable points in this timeline of policy development that are worth identifying.

Beginning with a background paper from the Ministry of State for Science and Technology (MOSST) in 1980—as well as the creation of the Task Force on Biotechnology, and the first National Biotechnology Strategy in 1983—the policy climate before regulations for biotechnology were established focused heavily on maintaining competitiveness through

technological development (Abergel & Barrett, 2002). According to Abergel and Barrett (2002) it was in 1988 that "MOSST published the first comprehensive document on biotechnology regulations in Canada"; an early example of policy development pushing for biotechnology regulation under existing policies and agencies (p. 143). By 1993, the Canadian federal government released a framework for regulating biotechnology products using existing legislation and regulatory bodies (CFIA, 2016). These are key indications of an early dedication to policy focused on regulating the products of biotechnology, and not the processes.

The Canadian Food Inspection Agency (CFIA) is a science-based regulatory body that was created in 1997, mandated to regulate novel[2] agricultural products, livestock feeds and fertilizers (CFIA, 2007). An impetus for the formation of the CFIA was the constrained fiscal budget of the Canadian Liberal government in the mid-1990s—that is, a central purpose for creating the CFIA was efficiency gains, not the improvement of scientific assessment and oversight for food safety (Prince, 2000). The CFIA is responsible for assessing the risks novel plants pose to human and animal health and the environment (CFIA, 2007), but the economic basis for its formation has important implications for how potential impacts are assessed. In an effort to increase economic efficiency, the CFIA has shifted assessment responsibilities over to industry, taking on the role of auditor as oppose to inspector (Prince, 2000). The CFIA follows certain policy principles for evaluating biotechnology products, including: building on existing legislation, focusing on product characteristics as opposed to production processes, and "to establish appropriate safety levels based on the best scientific information" (CFIA, 2016, para. 11). The CFIA's role is identified as a "science-based regulatory agency" responsible for

[2] Novel products include genetically modified organisms (GMOs), but also products made from conventional means.

assessing the safety of GM products (CFIA, 2007). However, this role is best understood within the context of a regulatory system that is designed to be economically efficient by (in part) sharing more regulatory responsibilities and inspection duties with industry (Prince, 2000). In the decade prior to the creation of the CFIA, regulatory responsibilities were held under Agriculture and Agri-food Canada—the same agency involved in the industry's development. Furthermore, the CFIA was established (in 1997) after decisions were already made on how to regulate GM products, such as the development of a product-based system for safety assessment, as opposed to assessments based on the technology used to develop the product (CFIA, 2007). The politico-economic context in which the CFIA has developed illustrates the necessity of understanding the role of science in risk assessments in conjunction with social, political, and economic concerns, as well as the particular approach to science—whether assessments are focused narrowly on the risks of specific characteristics of GMOs, or approached from more complexity oriented approaches.

Critical responses to GMO regulation in Canada

It was not until 1998 (and again in 2001) that the public was consulted on Canada's strategy to regulate biotechnology (Barrett, 2002). These consultations were not a resounding success, either. According to Magnan (2006), the political and economic interests of the Canadian state, expressed through the *Canadian Biotechnology Strategy*, constrain possibilities for public debate. This strategy captures "the Canadian state's role as both industry 'cheerleader' and regulator for biotechnology" by outlining Canada's commitment to innovation and growth in the industry, while accounting for health and environmental safety (Magnan, 2006). As such, public

debates and consultations over Canadian biotechnology are structurally limited in scope through the entanglement of public and private interests (see Magnan, 2006). Particularly interesting are the critiques of the Canadian Biotechnology Advisory Committee (CBAC). Established in 1999, CBAC is "an independent expert advisory" that counsels the Biotechnology Ministerial Coordinating Committee on public policy (CBAC, 2002, p. 1). A project[3] to review GM crop and food regulations was conducted by CBAC and was perceived by Canadian NGOs as a biased form of public consultation and possibly a ruse to capture legitimacy through public involvement (Prudham & Morris, 2006).

Consultations with the public (held across Canada in 1998 and 2001) as part of the 1998 Biotechnology Strategy were private meetings instead of open to the public, leading to a widespread boycott of the 2001 round of consultations (Barrett, 2002). The Canadian NGO community boycotted out of concern the workshops were a 'participation trap' designed to legitimize any recommendations produced by the project (Barrett, 2002; Prudham & Morris, 2006). As Kuyek (2002) explains, "[i]n August 1998, after a contrived public consultation process, the Liberals announced a new Canadian Biotechnology Strategy (CBS) and their intention to make Canada a world leader in the field" (p. 41). This strategy resulted in continued policy support and a wellspring of government funding, including Agriculture Canada's Matching Investment Initiative which encouraged collaboration projects between industry and government by matching government funding to industry contributions for up to $107 million over 5 years from 1995 to 2000 (Kuyek, 2002). The years that followed these initial two decades

[3] Prudham and Morris (2006) refer to this project as the "CBAC GM food project" throughout their article. This naming is consistent with CBAC's interim report "Improving the regulation of genetically modified foods and other novel foods in Canada", which refers to their seemingly untitled three-phase project as "the GM foods project" (CBAC, 2001).

(1980-2000) of government supported biotechnology development included valuable critiques of the agri-biotech regulatory system—the 2001 report *Elements of Precaution: Recommendations for the Regulation of Food Biotechnology in Canada* by the Royal Society of Canada being a key example[4].

A key segment of the RSC (2001, p. 3) report explains the importance of the varied, and interconnected factors impacting concerns over agricultural biotechnology, stating "[t]he health and environmental safety issues posed to the Panel in the Terms of Reference, though largely scientific in nature, often cannot be addressed fully without reference to broader ethical, political and social issues and assumptions". Reacting to the reports from the RSC (2001), Andrée and Sharratt (2004) recommend the explicit inclusion of ethical and socio-economic considerations within precautionary assessments. Social, economic, and ethical concerns have been central components in resistance campaigns against products like rBGH and GM wheat; potential market impacts becoming a central factor in most agri-biotech debates.

Concerns beyond the scientific assessment of health and environmental impacts of agricultural biotechnology have also found their way into Parliamentary debates. Alex Atamanenko, NDP Member of Parliament for the British Columbia Southern Interior, introduced Bill C-474 in 2010, which asked "for an amendment to the Seeds Regulations requiring that any new genetically modified seed be tested for potential harm to export markets before it is sold"[5]. The Canadian Biotechnology Action Network (CBAN) campaigned in support of this Bill, stating "this Bill is a critical opportunity to stop dangerous GE crops" and "is the first real debate

[4] The Canadian Biotechnology Advisory Committee's (2002) *Improving the Regulation of Genetically Modified Foods and Other Novel Foods in Canada* is another important example.

[5] Quoted by Atamanenko June 2, 2010 during the Standing Committee on Agriculture and Agri-food, Number 025, 3rd Session, 40th Parliament.

about the impacts of GE crops" (CBAN, 2010, p. 2). This Bill was defeated at the report stage. More recently, Atamanenko has explained that there are two points on this topic that he is happy are in the NDP's platform: (1) the need for the mandatory labeling of GM foods, as consumers have the right to know and choose whether or not they buy GM foods, and (2) the need for a moratorium on new GM crops until a thorough market analysis is done, which is what Bill C-474 originally proposed (Telephone Interview, April 2015). Atamanenko explained that he thinks these changes would ensure a more sober look at GM technology, and allow Canada to go forward from there, looking into topics like the precautionary principle. Perhaps debates will soon be revived in Parliament, as the U.S. recently passed a bill that will require mandatory labels for foods made with ingredients from GMOs (Addady, 2016 July 31). Though the U.S. system may not be an ideal bellwether for Canada's GMO regulatory system, this bill is a clear indication that these issues continue to be debated.

Canada's product-based approach

The Canadian Food Inspection Agency (CFIA) is responsible for the regulation of novel agricultural products, which includes GM crops, and does so using a conventional science-based approach, evaluating product novelty case-by-case (CFIA, 2007). The focus is the product and its novelty, and not the process (genetic modification or otherwise) by which it was produced—regulation is integrated into existing mechanisms for regulating all 'Plants with Novel Traits' (PNTs). This way of regulating GMOs has been criticized because instead of viewing GM products as being developed from a distinct process needing unique regulatory mechanisms, GM products are grouped with other "novel agricultural products" and regulated within systems

already set in place (Tait & Levidow, 1992). The listing of approved GM foods and crops reflects these ambiguous distinctions; Health Canada's (2016) website detailing approved novel food products provides a list of 186 different novel food product decisions dating back to 1994. The list includes a range of products from genetically engineered crops such as Monsanto's Glyphosate tolerant soybeans to non-GM foods with added plant sterols such as margarine from President's Choice, and orange juice from Coca-Cola (Health Canada, 2016). With such a broad range of products being categorized as novel foods, it is difficult to quickly discern how many types of genetically engineered crops have been approved in Canada.

Canada's position in the international arena

International lines are drawn between the scientific rationality approach adopted by Canada and the U.S. (and supported by the WTO) and the social rationality approach adopted in Europe (and supported by the Cartagena Protocol on Biosafety) (Howlett & Migone, 2010; Isaac, 2001). Canada's position on agricultural biotechnology is aligned (to a large extent) with the pro-agri-biotech countries of the United States and Argentina (Bernauer, 2003); it comprises a product-based focus with a scientific interpretation of the precautionary principle (Howlett & Migone, 2010). In contrast, the European Union (EU) utilizes a more strict process of labeling and technology approval, emphasizes the use of the precautionary principle (Bernauer, 2003), and adopts a socially oriented interpretation of precaution (Howlett & Migone, 2010). What is at stake between these two approaches to agri-biotech governance and policy development is a matter of (at least) economic growth and innovation, and the capacity to react to the risks and uncertainties associated with these technologies. On the one hand, GM crop producing countries

like Canada and the U.S. have defended their pursuit of agricultural biotechnologies through scientific risk assessments, enabling opportunities to capitalize of trade, growth, and innovation while limiting their capacities to account for the social, political, and ethical uncertainties of GMOs. On the other hand, countries adopting what can be termed a social rationality approach develop a system that, while less primed to capitalize on agri-biotech innovations, reacts cautiously to these technologies, accounts for a wider range of perspectives (social, political, ethical, and otherwise), and is arguably in a better position to handle the associated uncertainties. A clear distinction between these two systems is the treatment of the precautionary principle. Due to the contested and ambiguous nature of the precautionary principle, Canada's stance on precaution deserves closer scrutiny and further comparison with the social rationality model used in Europe.

The Cartagena Protocol on Biosafety (hereafter the Protocol), which is an international treaty governing the trade of GMOs, offers a key illustration of Canada's position in the international arena, including its stance on the precautionary principle. Canada played a major role in the treaty negotiations, which took place between 1996 and 2000; there was growing Canadian economic interest in exporting GM crops, and concerns over potential trade restrictions (Andrée, 2007). Alliances formed in negotiations of the Protocol; Canada chaired the 'Miami Group'—the group of major GMO exporting nations (including Argentina, Australia, Chile, the United States and Uruguay), which pushed for less strict regulations (Andrée, 2007; Clapp, 2003; Falkner, 2000). During negotiations industry organizations and the Miami group pushed for excluding the precautionary principle from the Protocol, focusing on the use of scientific risk assessments (Clapp, 2003; Falkner, 2000). Representatives from the global South, along with nongovernmental organization (NGO) allies, sought an application of the precautionary principle

in ways that would require the comprehensive assessment of GMOs, including social, environmental, health, and economic concerns (Andrée, 2005). The end result of the Protocol talks provides importing countries the right to restrict the importation of GMO's for health and environmental reasons (Falkner, 2000). This stipulation represents a compromise between key GMO exporters (including the U.S. and Canada) and the wide range of GMO importers (including the EU and the global South) (see Andrée, 2005).

Another important decision point in favour of the Miami group and industry groups is found in the preamble of the Protocol. The Protocol refers specifically to Principle 15 of the Rio Declaration when the term 'precautionary approach' first appears, which links the precautionary approach to scientific assessments and precautionary measures that are 'cost-effective' (Andrée, 2005; Clapp, 2003). The Protocol provides an illustration of Canada's commitment to conventional science as the prima facie decision-making rationality for agri-biotech risks. Such a commitment illustrates the ways in which the Canadian state is prioritizing technological innovation and economic development in the field of biotechnology, in contrast to adopting a precautionary approach to this industry, which would entail stricter rules on labelling and technology approval similar to that of the EU (Bernauer, 2003).

Resistance to GMOs in Canada

While the technologies to produce GMOs have been developing since the 1980s (at least), and the first GM plants arrive in the mid-1990s, it was in 1999 that the resistance to GMOs reached a turning point in Canada. That year marks the initial formation of the Canadian Biotechnology Action Network (CBAN)—the 23 member network of environmental, social justice and

consumer groups—as well as their successful opposition to Monsanto's Bovine Growth Hormone in Canada (CBAN, 2016). In the 1930s, Russian scientists discovered that the growth hormone somatotropin can be used to increase milk production in dairy cows. In order to produce large quantities of bovine growth hormone (BGH), genetically engineered recombinant E. coli was developed to make rBGH—recombinant BGH (Buttel, 2000). In the mid-1980s, controversy over Monsanto and Elanco's rBGH emerged throughout the U.S. and Europe (Kleinman & Kinchy, 2003). In 1988, rBGH was being tested in Canada; it was "quietly added to the general commercial supply", and the unsuspecting consumption of this milk resulted in media coverage of the public's negative reaction (Sharratt, 2001b, p. 385). With the help of Brewster Kneen and dairy farmer Lorraine Lapointe, the national Pure Milk Campaign brought together groups and individuals to call for a ban on rBGH, or product labelling at the very least (Kneen, 1999). Organizations including the Council of Canadians and the National Farmers Union played an active role in the resistance to rBGH, and by January 1999, Health Canada reported that they would be rejecting Monsanto's application for rBGH.

Several factors contributed to the overall success of this campaign, making it difficult to discern what actions had the largest impacts. Kneen (2014) describes the Pure Milk Campaign that he and Lapointe initiated as effective in buying time for a broader opposition to form. Part of this broader opposition came from the Dairy Farmers of Canada (DFC) and the National Dairy Council of Canada, both of whom raised concerns regarding market impacts should rBGH be approved (Andrée, 2011). The Council of Canadians and the NFU initiated a postcard campaign for individuals to voice their concerns to the Minister of Health, and coordinated the collection of hundreds of thousands of signatures. Appearing on national television, controversy over allegations of Monsanto's attempt to convince Health Canada scientists to approve rBGH

without delay was another significant aspect of the opposition (Sharratt, 2001). Furthermore, Canada's supply management system (all milk is pooled in a single system, producers buy 'quotas' to control production and are paid in relation to their production costs) reduced the overall need for rBGH—quotas limit the need to increase production (Andrée, 2011; Sharratt, 2001). Although the official rejection of rBGH came from Health Canada's consideration of scientific information regarding animal health and welfare concerns (Andrée, 2011; Sharratt, 2001), it is difficult to pinpoint the relative impact of the varied organizations and arguments involved in this campaign. In Kneen's (2014) view, the opposition was based largely on the grounds of food safety, leaving out broader issues of ethics. The connection between GMO resistance and more incisive criticisms of the approach to science in agricultural biotechnology, as well as assumptions of the inherent value of technological progress, are of particular interest to this study.

The case of Monsanto's GM Roundup Ready (RR) wheat is another key example of GMO resistance in Canada. Potential agronomic benefits for Roundup Ready wheat include increased yields and reduced dockage[6] (Wilson, Janzen, & Dahl, 2003), as well as environmental benefits through a reduction in chemical use (Berwald, Carter, & Gruère, 2006). This variety of GM wheat was produced through a partnership between Monsanto and Agriculture and Agri-food Canada (AAFC). Within this partnership, AAFC both supplied Monsanto with genetic material (the product of several years of research) and invested $500,000 into the development of GM wheat (Bueckert, 2003). Although AAFC is not responsible for conducting the health and

[6] Dockage refers to the unwanted foreign materials removed from grain when cleaned (Government of Alberta, 2015). RR wheat is able to reduce the total dockage percentage because it has the impact of reducing weeds, and therefore reduces the weed seeds in dockage (Wilson, Janzen, & Dahl, 2003).

environmental risk assessments for PNTs, it is a government body involved with the agri-biotech industry in Canada. This raises concerns regarding the dual role the Canadian government plays in promoting biotechnology yet remaining an objective regulator (see Abergel & Barrett, 2002).

In 2001, a coalition against the commercialization of GM wheat was formed in Canada and by 2004 Monsanto announced the decision to discontinue research and development on the wheat variety (Eaton, 2009; 2013). This decision is said to have been in reaction to a "coalition of farm, rural, consumer and health organizations" that joined in opposition to Monsanto in 2001 (Eaton, 2011). Various organizations such as the Saskatchewan Organic Directorate, Canadian Wheat Board, National Farmers Union, Green Peace Canada, and the Council of Canadians joined in opposition to Monsanto's RR wheat, citing a large variety of reasons to oppose the crop (Eaton, 2009; 2013). A key member of this coalition was the Canadian Wheat Board (CWB), which claimed that 80 percent of customers were concerned about the introduction of GM wheat (Eaton, 2011). The CWB recommended a cost/benefit analysis be conducted as part of the approval process (Eaton, 2011). The CWB's reaction illustrates the economic risk involved in adopting GM crops. Within this coalition against the introduction of GM wheat, the National Farmers' Union (NFU) and the Saskatchewan Organic Directorate (SOD) represented more of a politico-economic standpoint against for-profit plant science and the risk of GM contamination (Eaton, 2011). The SOD attempted a lawsuit for compensation regarding the loss of organic canola due to contamination and an injunction against GM wheat being introduce into Canada in fear of the same result (Eaton, 2011). Regarding resistance to both rBGH and GM wheat, Andrée (2011) highlights the role of political economic forces and the significant influence of potential market losses in particular. How some ideas take precedence over others, and the forces involved in the construction of anti-biotech discourse, are key areas of focus in this thesis.

CHAPTER OUTLINES

This section briefly outlines the contents of the six chapters that follow. Included are chapters on theory, methods, three case studies, and conclusions. As mentioned in the Preface, the three case studies (Chapters 4–6) are written as individual manuscripts, in the style of academic journal articles.

Chapter 2 introduces the theoretical approach that is applied throughout the dissertation, a four-dimensional power framework. Power—in its varying forms—represents a central focal point from which this study approaches key research questions. I utilize power theory in order to uncover imbalanced and unjust contexts of influence and control. Each of the four dimensions of power are described in detail, and reflected on in light of other approaches. The concept of 'constitutive power' is one particular type of power that is showcased as an expansion or useful addition to more traditional approaches to power analysis, and is the focus of several sections of this project. Constitutive power is developed from Digeser's (1992) influential work on the 'fourth face of power', and utilizes Foucauldian accounts of power to uncover relations not focused on by the other approaches (see Rye 2014; 2015; Trowler, 2001). This study finds value in combining the 'traditional' approaches to power with Foucauldian accounts in order to study the breadth of power relations in Canadian agriculture and agrifood politics.

Chapter 3 reviews this study's methodological approach, including discussions of data collection, analysis, and verification. The perspective of qualitative research is described, including this study's inclusion of abductive reasoning. Methods of case selection and data collection are discussed for both interviews and documentary data. Importantly, this chapter outlines the study's focus on analyzing discourse (language, meaning, signification, etc.) in

studies of power. A discussion of discourse and what it means for this dissertation is described, followed by an explanation of the methods of discourse analysis used; principally Ruiz Ruiz's (2009) work on sociological discourse analysis. Finally, discussions of data validation and verification, specifically regarding methods of triangulation, are discussed.

Chapter 4, "Power and discourse in GMO debates: An analysis of publicity and campaign materials in Canada" is the first of three sole authored manuscripts which make up the core, empirical work of this dissertation. This paper explores pro-biotech and anti-biotech discourses to add news insights regarding the power relations embedded in efforts to inform public opinion on the topic of agricultural biotechnology. These insights are divided into two main arguments: (1) the Canadian state's overall positive position toward agricultural biotechnology provides leverage for pro-biotech public relations while predisposing and delimiting anti-biotech campaigns, in effect reinforcing pro-biotech discourse in Canada, and (2) the potency of pro-biotech frames is constituted and sustained by historically and culturally embedded norms and values, while anti-biotech campaign materials are enveloped and limited by these conditions. This paper uncovers a clearer picture of the complexity of power relations within agri-biotech discourse, and the extent to which anti-biotech groups are disadvantaged in these debates. These findings are important for advancing our understandings of power in the context of pro-biotech and anti-biotech discourses, directing critical attention to the ways discourses maintain power imbalances.

Chapter 5, "Debating Bill C-18: An analysis of power and discourse in parliamentary proceedings on Canada's Agricultural Growth Act", is the second of three manuscripts. The focus of this chapter is Canada's Agricultural Growth Act (debated in Parliament from December 2013 to February 2015), which amended several pieces of agricultural legislation. The

debates over potential implications from the Bill are analyzed, including increased corporate control, further restrictions to seed-saving practices, financial hardships, and so on. Specifically, I examine how divergent perspectives on the Bill were accounted for within parliamentary debates. This article contributes to a broader and more integrated approach to exploring the ways power dynamics get articulated in law and policy debates. Discourse analysis of 32 parliamentary documents helps to shed light on a range of patterns regarding relations of power and control in the text and context of these debates. Based on this analysis, I discuss the relations of power that work together in an imbricated manner to produce an imbalanced climate for agriculture and agrifood law and policy development; one that prioritizes economic freedom, global competitiveness, and private property rights. These findings highlight the role of discourse in Parliamentary debates, the interconnectedness of varying power relations, and offer important insights for building a more inclusive and fairly balanced approach to developing law and policy.

Chapter 6, "Power, discourse, and media: Normative influences on GM alfalfa news coverage in Canada", is the third and final manuscript. The focus of this chapter is the news media discourse regarding the introduction of genetically modified alfalfa in Canada. On April 9th, 2013, rallies were held in 38 cities across Canada in a 'Day of Action' to protest the introduction of genetically modified (GM) alfalfa. These rallies were reported by news media outlets across the county. Based on a discourse analysis of 88 news reports on GM alfalfa published over a four year period, this article identifies constitutive power relations embedded in the news reports. Specifically, this chapter shows how news coverage is influenced by normative conditions in at least two ways: (1) news values and media culture shape the report writing and editing process, privileging particular 'newsworthy' events and content; and (2) dominant knowledges and positions reflecting neoliberal values such as market liberalization and

privatization are re-embedded through these reports. This paper showcases news media as an under-acknowledged site for examining how resistance discourses infiltrate the public domain (or are prevented from so doing), and what forces impact the construction of such discourses. These findings help to advance research on the news coverage of Canadian farm and agricultural issues, and offer important insights regarding the impacts anti-biotech campaigns have on the news media, and vice versa.

Chapter 7 is the concluding chapter of this dissertation, which outlines final thoughts, study limitations, and lessons learned. This chapter begins with a review of the dissertation's empirical and policy relevant contributions to knowledge, outlining the importance of each case study's findings. Collectively, the three empirical studies (Chapters 4–6) offer important insights regarding discourses in Canadian agriculture and agrifood; shared patterns are found across the different types of discourse analyzed, including the importance of norms, values, and history. These three articles also provide a fitting site for evaluating the four-dimensional power typology—the overall effectiveness of this theoretical approach is reflected on in this chapter. Importantly, the four-dimensional power theory—with an emphasis on constitutive power—is reflected on for its capacity for pairing with critical and sociological methods of discourse analysis. The combination of theory and method utilized throughout this study helps to fill gaps in research that has previously focused too heavily on one or the other. As power relations include the actionable deployment of discourse to achieve certain ends, and also involve the influences of historically and normatively embedded discourse, the effective methodological deployment of discourse analysis becomes an essential component for developing research findings in this thesis. Finally, this chapter proposes useful directions for future research that may uncover new ground, or possibly account for some of the limitations of this study.

CHAPTER 2

POWER AS A THEORETICAL APPROACH

This chapter outlines the conceptual framework for understanding power that is applied throughout this dissertation. Exploring power, in its many forms, offers a means to analyze phenomena with particular attention paid to what influences and directs actions and decision-making in a range of contexts. For instance, what forces are responsible for the success or failure of campaigns against GMOs? For the purposes of this dissertation, the overall context being considered is agricultural and agrifood issues in Canada, with a particular focus on agricultural biotechnology. Although there is not always a clear line dividing the ways in which power is expressed, this study adopts a perspective on power that involves examining both the power of actors as well as the power of knowledge, norms, and discourses. This perspective is applied to three case studies, the focus of each being the myriad power relations embedded within public discourse on GMOs and other key agricultural debates, including an exploration of the effects of these power relations and the ways in which they are resisted.

To achieve these research goals, I engage with a range of literatures to develop a clear and effective approach to studying power. This study approaches power as (1) a capacity that is possessed and deployed for certain ends, by actors such as corporations for example (see Fuchs, 2007; Clapp & Fuchs, 2009), and (2) as a constitutive, underlying force that establishes ideas, understandings, and ways of seeing the world, and also influences other forms of power (see Digeser, 1992; Rye, 2014). Constitutive power highlights the embedded normative and historical

discourses that are not possessed by actors, but actors may (and do) strategically capitalize on their existence. This chapter is intended to clearly map out this dissertation's theoretical perspective on power.

From classical theorists like Max Weber to contemporary scholars like Mitchell Dean[7], power, as a theoretical concept, has been extensively (re)defined, reviewed, described, and categorized. This extensive (re)conceptualization of power has resulted in literatures grouping and categorizing different frameworks, orientations, and directions on power[8]. As understandings of power have developed, useful typologies for conceptualizing power relations have also emerged. This study adopts the approach of viewing power relations within a typology.

A four dimensional typology is utilized in this dissertation. Specifically, Clapp and Fuchs' (2009) and Fuchs' (2007) use of *instrumental*, *structural*, and *discursive* forms of power are employed. This power typology takes form, in part, by drawing on the foundational power writings of Dahl (1957), Bachrach and Baratz (1967), and Lukes (1974), while also accounting for key insights of other authors that have developed comparable means for categorizing and conceptualizing power (see Barnett & Duvall, 2005; Strange, 1988). Literature that outlines a fourth dimension, referred to here as *constitutive* power, is used to extend the three dimensional approach. The work of Michel Foucault informs this fourth dimension, which has been taken up by a range of authors including Dean (2010), Digeser (1992) and Haugaard (2002; 2012), among others. All four types of power interlace in varying combinations depending on the social context. By using a Foucauldian approach to power to extend the three-dimensional view, this

[7] For Weber's writing on power see *Economy and Society* (1978 originally published 1922), and for Dean's recent work on power, see *The Signature of Power: Sovereignty, governmentality and biopolitics* (2013).

[8] See, for example, the widely used framework from Barnett and Duvall (2005), as well as the concepts and categories developed by Clegg (1989), Haugaard (2002), and Lukes (1986)

framework offers a valuable approach to power analysis that enables a detailed and expansive examination of discourse in each of the three case studies.

Discourses, in the context of this framework, are not simply the use and replication of words and statements; they are integrated and productive aspects of social life, which contain a sort of embedded power or force in their deployment. In Arnold Davidson's introduction to Foucault's (2003) *Society Must Be Defended*, he describes a single-page text[9] whereby Foucault outlines the effects of discourse:

> Discourse—the mere fact of speaking, of employing words, of using the words of others (even if it means returning them), words that the others understand and accept (and, possibly, return from their side)—this fact is in itself a force. Discourse is, with respect to the relation of forces, not merely a surface of inscription, but something that brings about effects. (p. xx)

Power and discourse are closely linked, influencing one another in a variety of contexts. As this dissertation applies power theory within discourse analyses, it is essential to establish the importance of viewing discourses as an intricate part of both the theoretical and methodological approaches to this study. In this sense, discourse is approached in two ways: as a strategic tool deployed by actors in power relations (see the section below on 'discursive power'), and as an entity that is not possessed or deployed by power actors, but instead has its own force that influences power games in ways that are more underlying, passive, and amorphous (see below on 'constitutive power'). The framework outlined in this chapter extends power analysis beyond discussions of agency and powerful actors, such as agri-biotech corporations; attention is paid to the historically formed norms, ideas, and discourses that influence actors' capacities for deploying varying forms of power.

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[9] Michel Foucault, "Le Discours ne doit pas être pris comme…," in *Dits et écritis*, vol. 3, p. 124

ON DEFINING POWER

What is *power*? In the context of this dissertation, power is used to refer to what can broadly be considered social and/or political power. It is instructive to begin with the origins of the word, which informs all uses of the term. Latin origins of 'power', namely *posse*, lead to definitions as simple as 'to be able to'. This basic definition parallels Max Weber's conception of power as a capacity and position—viewing power "as the probability that one actor within a social relationship will be in a position to carry out his will despite resistance, regardless of the basis on which its probability rests" (Weber, 1978, p. 53 as cited by Haugaard, 2002, p. 6). This definition may be sufficiently applied in the first three dimensions of power examined in this dissertation, which focus on the positions and actions of varying actors and organizations that deploy varying forms of power in pursuit of certain interests/gains. This conceptualization of power is, by and large, approached as 'zero-sum'[10] and negative; powerful actors carry out their will by having more power than other actors. Talcott Parsons (see 1963 as cited by Haugaard, 2002; 2012) made important contributions to the power debate by proposing that power is not always zero-sum—since being subject to another's power is not inherently contrary to a person's best interests. This debate is related to literature conceptualizing *power over* versus *power to*/*power with*.

Power is theorized as *power over* by a range of authors; including those reviewed below in discussing the three-dimensions of power (see Dahl, 1957; Bachrach & Baratz, 1962; Lukes, 1974). From this perspective, power is viewed as a form of domination—an actor has the

[10] Zero-sum refers to an understanding that those who have/gain power impose a lack/loss of power for others. See Read (2012) for a detailed examination of power as zero-sum versus an alternative conceptualization, 'variable-sum'.

capacity to exert power over another actor. The concept of *power to*/*power with* is, in contrast, typically about empowerment. In addition to Parsons's work, Arendt's (1970) discussion of power as the ability to act in concert is an example of *power to*/*power with* (see also Haugaard, 2002). The vision of power deployed in this dissertation contains both power as a form of domination/zero-sum (*power over*) as well as a form of empowerment (*power to*/*power with*). Foucault (1980) and Haugaard's (1997) examples of this combined approach provide key insights for detailing this study. This dissertation applies a perspective wherein power (of any type) can involve domination, empowerment, or a combination of circumstances and results. The Canadian democratic electoral system provides a fitting example of the complexities of power dynamics; if one party wins an election, it is insufficient to consider the opposing parties as dominated or powerless. The opposing parties retain a "future capacity for action" based on the stability of the democratic institution (see Read, 2012). In considering the ways in which circumstances of power to and power over, and zero-sum and non-zero-sum, intertwine and overlap, this study focuses on both domination and empowerment within the varying forms or 'dimensions' of power.

The importance of conceptualizing power as both negative/dominating and productive/empowering is made more evident through this study's attention to discourse. On this point, Foucault states:

> If power were never anything but repressive, if it never did anything but to say no, do you really think one would be brought to obey it? What makes power hold good, what makes it accepted, is simply the fact that it doesn't only weigh on us as a force that says no, but that it traverses and produces things, it induces pleasure, forms knowledge, produces discourse. It needs to be considered as a productive network which runs through the whole social body, much more than as a negative instance whose function is repression. (Foucault, in Rabinow, 1984, p. 61)

Power is conceptualized as a 'productive network'; it involves the production of certain forms of knowledge and discourses. Exploring positive/productive forms of power helps to extend understandings of power as not "in the primary existence of a central point, in a unique source of sovereignty" but as "produced from one moment to the next, at every point, or rather in every relation from one point to another" (Foucault, 1978, p. 93). According to Foucault (1978), "power is everywhere" and is both negative and positive, involving the production of knowledge and discourse. So, what might be said of the relations between power and scientific knowledge? Moreover, how does this conceptualization of power inform analyses of biotechnology and other agricultural sciences and associated expert knowledges?

Foucault's understandings of power have been usefully applied to study a range of issues regarding food, agriculture, and GMOs. These scholars include: Gerlach, Hamilton, Sullivan, and Walton (2011) who utilize Foucault's approach in examining biopower[11] in the context of genetic technologies; Humiston's (2013) discussion of biopower in the context of GMOs and food sovereignty; Phillps and Ilcan's (2003) historical examination of global food governance; and Andrée's (2002; 2007) application of Foucault's power concepts to GMO politics in Canada. The present study applies Foucauldian power theory in ways that are distinct from past approaches: first, this study applies Foucault's conceptualization of power within a four-dimensional power typology (discussed below), and second, as this study focuses on broader influences of knowledge and discourse, it favours power discussions regarding norms, values and

[11] Biopower is a term used by Foucault in the first volume of *The History of Sexuality* (1978) to describe the "numerous and diverse techniques for achieving the subjugation of bodies and the control of populations" (p. 140). Gerlach et al. (2011) explain Foucault's notion of biopower as the governmental activity "whereby vital characteristics of human life – health, reproduction, death, sexuality, and so on – are brought within regimes of power and governance" (p. 10-11).

the production of 'truth'—opposed to Foucauldian concepts such as 'biopolitics', 'biopower', and 'governmentality', which provide a more focused view regarding the analysis of governance and control. This study's broad approach leaves room for exploring power as a capacity and will deployed by actors, as well as an underlying force that helps to make such interactions possible.

On one hand, the positions and actions of varying agri-biotech actors/organizations must be analyzed for their capacity to deploy varying forms of power in pursuit of their individual and/or collective interests. On the other hand, it is necessary to examine what made such capacities for effective exercise of power possible. It is here where the examination of the production of truth—as in scientific knowledge—becomes critical. As Foucault describes it, "it's not a matter of emancipating truth from every system of power (which would be chimera, for truth is already power), but of detaching the power of truth from the forms of hegemony, social, economic, and cultural, within which it operates at the present time" (Foucault, in Rabinow, 1984, pp. 74–75). For instance, the dominance of scientific knowledge/expertise (particularly conventional, reductionist forms of scientific knowledge) in the politics of agricultural biotechnology needs to be examined with regard for the forms of knowledge being excluded or marginalized. Foucault (2003) captures the influences of scientific discourse, stating:

> The question or questions that have to be asked are "What types of knowledge are you trying to disqualify when you say that you are a science? What speaking subject, what discursive subject, what subject of experience and knowledge are you trying to minorize when you begin to say: 'I speak this discourse, I am speaking a scientific discourse, and I am a scientist.' What theoretico-political vanguard are you trying to put on the throne in order to detach it from all the massive, circulating, and discontinuous forms that knowledge can take? (p. 10)

Scientific knowledge—including its production and deployment—is embedded in relations of power. For example, Bronson (2014) examines the landmark Canadian court case of *Schmeiser*

v.Monsanto to examine the role of science communication within the court system and the ways in which certain forms of knowledge can be prioritized over others. Situated in a Science and Technology Studies framework, Bronson (2014) uses discourse analysis to examine how:

> the mechanisms of science communication—and in particular the authoritative acts of science communication emanating from the courts—are seen as helping to shape and/or solidify conceptions of science and technology, as well as contributing to particular relationships of power around them. (p. 527)

Knowledge, using a Foucauldian understanding, is completely integrated with power. That is, "the exercise of power perpetually creates knowledge and, conversely, knowledge constantly induces effects of power" (Foucault, 1980, p. 52). It is essential to examine the role of power in actors'/organizations' engagement with discourses which privilege certain ideas, certain knowledges. The notion of science-based regulatory frameworks proliferate in agri-biotech politics; by approaching this notion from the position of multiple knowledges (not one Truth) it becomes possible to examine the power relations embedded in scientific discourse.

The theoretical framework on power utilized in this dissertation revolves around four distinct types, or dimensions of power. This particular distinction between four types of power allows for a clear and thorough analysis, however, all four dimensions discussed here are heavily integrated, interacting with one another in different contexts. Taken as a collective, this power framework intends to be both incisive, as well as broad in scope. This dissertation pulls from a range of literature on power to formulate an effective approach to analyzing power in discourse on Canadian agricultural politics and biotechnology. As mentioned, the impetus for this four-dimensional approach, however, is the effective application of a three-dimensional power framework in research on global governance and agrifood corporations (see Clapp & Fuchs, 2009; Fuchs, 2007) and literature outlining a fourth dimension (see Digeser, 1992).

POWER IN THREE DIMENSIONS

By conceptualizing power into different types, or 'dimensions', it is possible to clearly articulate how power is more than just the capacity to force a preferred outcome from a particular set of actors. Outcomes can be structurally influenced and actors can be manipulated into prioritizing certain outcomes. This section outlines three key dimensions of power often identified in policy debates, including examples wherein these dimensions were utilized (see Clapp & Fuchs, 2009). Each dimension is described in turn, and important interconnections are outlined afterward.

Instrumental power

The capacity to directly influence an actor's actions and decisions describes the first dimension of power. Robert Dahl (1957) is widely cited in reference to direct, instrumental dimensions of power; his paper 'The concept of power' begins with this statement:

> That some people have more power than others is one of the most palpable facts of human existence. Because of this, the concept of power is as ancient and ubiquitous as any that social theory can boast. If these assertions needed any documentation, one could set up an endless parade of great names from Plato and Aristotle through Machiavelli and Hobbes to Pareto and Weber to demonstrate that a large number of seminal social theorists have devoted a good deal of attention to power and the phenomena associated with it. (p. 201)

Dahl's (1957) conception of power focuses on actors' capacity to influence actions/events through their own actions: "*A* has power over *B* to the extent that he can get *B* to do something that *B* would not otherwise do" (p. 203). Dahl's approach fits well within Weber's conception of power outlined above; an actor is in a position to carry out his/her will (Haugaard, 2002). This

form of power covers "a range of relations between actors that allow one to shape directly the circumstances and/or actions of another"[12] (Barnett & Duvall, 2005a). These direct and overt power relations are described and analyzed in this dissertation as *instrumental power*.

Clapp and Fuchs (2009) usefully operationalize instrumental power in examining the influence of agri-food corporations, for instance through lobbying activities in policy formation. As Fuchs (2007) describes it, "the exercise of instrumental power by business is first and foremost associated with lobbying, that is, business representatives' communication with politicians and bureaucrats in attempts to influence political and regulatory decision making" (p. 71). Looking beyond lobbying activities, instrumental power involves the mobilization of resources to influence actors directly and is therefore studied in a variety of contexts which involve the direct influence of one actor or organization over another.

Smythe (2009) explains the Canadian government's strongly supportive position on biotechnology represents a form of instrumental power. This is evidenced in policies such as the 1993 Federal Regulatory Framework for Biotechnology, which sets Canada in directions that foster "a favourable climate for investment, development, innovation, and adoption of sustainable Canadian biotechnology products and processes" (Industry Canada, 1998, p. 23). Further, Sell (2009) explains that instrumental power of agrifood corporations consists of their access to decision-making bodies, influence over public-sector actors, and their ability to withhold technological innovations. Instrumental power is an overt form of power that is essential to comprehensive analyses—but there are several other ways in which power is

[12] In their own typology on power, Barnett and Duvall (2005a) refer to this type as 'compulsory power'.

deployed. It is important to consider instances where actors seek to influence decision making by structuring the possible options or outcomes in a given context.

Structural power

The second dimension of power, also referred to as the second 'face', is typically credited to Bachrach and Baratz (1962), and involves the limiting and arranging of structural circumstances to control and inhibit the actions of actors/organizations. In discussing this second dimension, Clegg (1989) describes how "power might be manifested not only in doing things but also in ensuring that things do not get done" (p. 11). By extending Dahl's (1957) power concept, Bachrach and Baratz (1962) highlight a second "face" of power, which investigates the "mobilization of bias"; actors exert power by "creating or reinforcing social and political values and institutional practices that limit the scope of the political process" (p. 948). This form of power is referred to as *structural power*, and is mobilized in activities such as rule-setting by corporations through self-regulation (Clapp & Fuchs, 2009).

In structuralist approaches to power, emphasis is placed on the material structures influencing and predetermining actors' options (Fuchs, 2007). As such, this form of power is present in the material structures that allow corporate actors to determine and enforce certain institutional rules—private certifications and corporate social responsibility (CSR) programs are important examples of how corporate firms have become embedded in governance decisions (Clapp & Fuchs, 2009). The structural power of corporations is also deployed passively; governments will comply with them in anticipation of their reaction because of their dependence on corporations for "economic growth, employment, and investment" (Fuchs, 2007, p. 105).

Structural power can also be used to describe the agenda-setting of corporations, for instance in the alliances between agribusiness corporations and governmental agencies in the promotion of GM crops as food aid (Williams, 2009). Furthermore, Sell (2009) explains that agricultural biotechnology firms, based on their position in the global seed industry, deploy structural power through a range of private property rights (such as intellectual property rights for plant varieties) which protect their investments, as well as through the economic concentration of these firms (Sell, 2009).

Barnett and Duvall's (2005a; 2005b) approach to this type of power is largely covered by their term "institutional power", which examines the ways in which actors exert power indirectly by controlling the conditions of action for other actors. An example they provide is "when states design international institutions in ways that work to their long-term advantage and to the disadvantage of others" (Barnett & Duvall, 2005a, p. 3). The explicit focus on institutions is suitable for their framework for studying power in international relations research, but less suitable for the broader, interdisciplinary approach taken here. Further, Barnett and Duvall (2005a) approach this form of power as not directly possessed by powerful actors, and more relational based on institutional arrangements. The category of structural power presented here simplifies actors' relationships to a possessed capacity to exert influence through structural arrangements.

It should be also be noted that Susan Strange (1995; 1996; 1998) has contributed to the term 'structural power', and approaches it with a wider scope than utilized in this paper. Strange (1998) sees relational power as "the power of *A* to get *B* to do something they would not otherwise do", while structural power refers to "the power to shape and determine the structures of the global political economy within which other states, their political institutions, their

economic enterprise and (not least) their scientists and other professional have to operate" (p. 24-25). Put briefly, relational power is comparable to my use of instrumental power, and Strange's structural power would generally encompass the use of structural and discursive power employed here. Following Clapp and Fuchs (2009), I find it useful to make further distinctions. The capacity to shape, for instance, policy options (structural power) is distinguished from the capacity to shape, for instance, policy opinions— an example of discursive power. Furthermore, it is worth pointing out that Strange's (1988) discussion of the 'knowledge structure', a form of authority derived from knowledge, includes complements to this study's application of discursive power as well as constitutive forms of power discussed below.

Discursive power

By incorporating the power to influence opinions and perceptions, discursive power provides a critical development to this project's conceptual approach. Lukes' (1974) book *Power: A radical view* defines Dahl's (1957) work as the first dimension of power, Bachrach and Baratz's (1962) work as the second, and his own 'radical' conception of power as the third. Lukes (1974) extends (and critiques) the previous discussions of power by adding a third 'dimension' to explain how subjects being influenced can act voluntarily, and willingly subject themselves to power relations due to a manipulation of their preferences. This form of power accounts for modifications in actors' values and beliefs that are contrary to their best interests (Lukes, 1986). The focus on 'best interests' in Lukes' approach has been criticized for its presumption of knowable, objectively defined interests, among other issues (see Clegg, 1989; Haugaard, 2002); however, this study approaches this type of power through a focus on the discursive framing of certain

products, ideas, perceptions, and so forth[13]. How powerful actors, through advertising and public relations mechanisms for example, are able to influence public opinion on agriculture and agrifood policies, regulations, and technologies is of particular interest to this study.

Clapp and Fuchs (2009) and Fuchs (2007) refer to this third dimension as *discursive power*; it precedes decision-making and involves the shaping of norms and values. As Sell (2009) describes it, "discursive power refers to the potency of the frames that actors use to couch their preferences" (p. 188). Both transnational corporations (TNCs) and NGOs deploy discourses as a means to gain power, and influence policy. Williams (2009) argues that agribusiness firms are acting on the defensive, promoting a narrative that is supportive of GM crops and foods being sold; the corporate promotion of GMOs centres on "the construction of an alternative discourse that emphasizes economic efficiency, environmental sustainability, and food security (p. 156). Recognition of this form of power acknowledges the role of media and other public relations mechanisms in framing political issues (Clapp & Fuchs, 2009). Clapp (2009) discusses the discursive power deployed by corporate players in the food aid debate; through press releases, website promotions, and media interviews, actors benefiting from food aid contracts have influenced policy makers and the public on its importance. As applied in this dissertation, discursive power is expressed by a variety of actors and organizations vying for public influence.

Antonio Gramsci's (1971) *Selections from the prison notebooks* is an important and widely utilized contribution to literature on power, and the approach taken in these writings

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[13] Barnett and Duvall (2005a) draw from Lukes to formulate their category of 'structural power', which does share commonalities with this study's approach to discursive power. The focus taken in this research project differs from their approach by isolating the direct acts of influence over the perspectives and opinions of others as what might be called discursive power, and leaving discussions of structurally embedded influences, for example, to be included in the next category, termed constitutive power.

provides parallels to discursive power that are worth briefly outlining here. The concept of hegemony is central to Gramsci's (1971) work, wherein the dominance/authority of one group over another rests in the balance of consensus and coercion. As described by Levy and Newell (2002),

> Hegemony is not dependent on coercive control by a small elite, but rather rests on coalitions and compromises that provide a measure of political and material accommodation with other groups, and on ideologies that convey a mutuality of interests." (p. 86)

The notion of power and control stemming from consensus over ideologies resembles the activities of corporate framing discussed by proponents of discursive power. Gramsci's work is not explicitly utilized within this study's four-dimensional power framework; however, Gramscian approaches to power abound in research on agricultural biotechnology, and such perspectives have an important role to play in the overall point-of-view taken in this study. Valuable contributions have been made to literature on power and GMOs using a Gramscian or neo-Gramscian approach; examples include Carroll (2015) and Newell's (2009) research on the international/global context, and Andrée (2011) and Magnan's (2007) research on the Canadian context.

Carroll (2015) examines the impacts legal institutions have had in the development of the GMO food economy, and applies Gramsci's work to explain why laws slowing the development of the GMO food economy have not challenged its underlying neoliberal normative basis. Relatedly, Magnan's (2007) study of coalitions against genetically modified (GM) wheat in Canada draws upon a neo-Gramscian approach to social movements to examine the frames used in the news coverage of this controversy. Magnan (2007) found that the coalition of disparate actors/organizations against GM wheat relied on a narrow framing of the problem

(economic/market impacts from adopting GM wheat), which failed to produce a counter-hegemonic discourse challenging structural conditions and effects, such as the social and ecological impacts of the dominant model of agriculture (Magnan, 2007). What these two studies point to are the pervasive frames that have developed into a dominant discourse wherein neoliberal ideas (and broader norms regarding economic growth) are considered contemporary common sense. Future research could benefit from integrating and contrasting Gramscian and neo-Gramscian approaches with the four-dimensional approach to power utilized here, particularly on the points of coercion, consensus, and ideology.

Interconnections between three types of power

Instrumental, structural, and discursive forms of power do not exist in isolation. The typology of three types/definitions is useful for building a better understanding of power's varying forms, but these types are, in many ways, co-created and co-dependent. As such, it is important to acknowledge the ways in which discursive power, for instance, can boost one's instrumental and structural power. Fuchs (2007) discusses these interactions, explaining that

> Business can employ its discursive power to enhance its instrumental power by supporting its policy stances and providing a justification for improved access to policymakers. Likewise, business can utilize discursive power in attempts to expand its structural and discursive power by influencing the definition of the public and private spheres as well as the identities and characteristics of actors, and by thereby strengthening the perceived legitimacy of self-regulation and reaffirming the legitimacy of business as a political actor. (p. 154)

A relevant example of these types of interactions is found in the Canadian state's efforts to develop a domestic biotechnology industry. By stressing the importance of scientific and

technological progress, the Canadian state has used its instrumental power to help establish an agri-biotech industry for decades. These efforts are intertwined with structural power, evident in actions like the public consultations over biotechnology that were structured in ways widely viewed as biased toward the industry (Kuyek, 2002; Barrett, 2002). Furthermore, discursive power is found in the ongoing efforts by the Canadian state to promote and justify the development of the agri-biotech industry, through means that help shore up the instrumental, structural, and discursive power of various industry players—corporations, farm organizations, as well as the Canadian state. These three types of power, while interacting with one another, are also informed by embedded ideas, norms, and discourses.

How might shifts in societal norms impact an actor's instrumental, structural, or discursive power? As Fuchs (2007) argues, "the present extent of the discursive power of business depends on the prominence of neoliberal norms and ideas" (p. 154). Fuchs identifies an important connection here between the capacity to exert discursive power and the presence of pre-established norms and ideas surrounding market actors (discussed further in the following section on *constitutive power*). The rise of neoliberalism[14] instituted a level of trust and public confidence in the problem-solving ability of market actors, which helps to improve their political authority (Fuchs & Glaab, 2011).. Important insights can be gleaned from an examination of norms and ideas, and how some are more prominent than others. Accounting for the effects of

[14] While acknowledging the varied and heterogeneous definitions and applications of neoliberalism, this study seeks to emphasize a relatively persistent viewpoint of neoliberalism as a political movement committed to laissez-faire economic policies (see Hartman, 2005). Furthermore, the intention of this study is to review the influences of 'neoliberalism as discourse', incorporating discussions of who produces neoliberal discourses and who is constrained by them; this conceptualization acknowledges some scholars' preference to refer to 'neoliberalization' as a way of accounting for the variability and dynamic characteristics of neoliberalism (Springer, 2012).

changing values and normative assumptions necessitates an expanded view of power. This dissertation operationalizes these three dimensions of power (instrumental, structural, and discursive) in complement with a fourth dimension—what I refer to as *constitutive power*.

ADDING A FOURTH DIMENSION: CONSTITUTIVE POWER

Constitutive power is different in key respects from the first three dimensions of power, but is also interrelated with them; by incorporating constitutive power into this framework, the overall approach to what power is, and how it is deployed, is shifted. Digeser (1992) provides an explanation for using this form of power—which he refers to as the *fourth 'face' of power*, or $power_4$—as an expansion of the other conceptions, stating:

> $Power_4$ expands the study of power itself. At the very least, $power_4$ is involved in the forging of reasonable, responsible subjects willing and able to sustain the other conceptions of power. $Power_4$ does not displace the other faces of power, but provides a different level of analysis. (p. 991)

The core idea behind this concept is that lying underneath the agency-based forms of power are key forces that are not accounted for by examining agents in pursuit of their own objectives. The term 'constitutive' can be understood as having the power to establish or enact something[15]. As such, the term 'constitutive power' can be (in a general sense) thought of as *the power to establish or bring into being other forms of power.* This form of power diverges significantly from the first three dimensions of power, focusing on the production of knowledge as well as the production of subjects ('subjectification')—as opposed to the agency of subjects (which is

[15] This is based on the definition at Dictionary.com (2016), see: www.dictionary.com/browse/constitutive

covered in the first three dimensions). Knowledge plays a foundational role in that certain dominant ideas become normatively embedded and are made to appear axiomatic (e.g. modern scientific discourses). Individuals/subjects, or more accurately their formation, are intricately wedded to the role of knowledge; social roles, subconsciously embedded through everyday activities and rote learning, are a key conduit for expressions of constitutive power (e.g. legal actors, Members of Parliament, reporters, etc.). The role of knowledge and subjectification is elaborated in the next section, which outlines the importance of Foucault's work on power.

Grounded heavily in the work of Foucault, Digeser (1992) and Dean (2010; 2012) provide a useful explanation of this type of power. Dean (2010) explains that it is useful to look beyond "the identification of agents of power" and to "attempt to understand the kind of power relations in which such forms of agency appear" (p. 461). This form of power exists outside the actions of agents operating towards their own ends; power is present in the effects of historically formed discourses. That is, in this perspective power is analytically historical, incorporating the study of symbols, gestures, liturgy, etc. (Dean, 2012). Power, in this dimension, is not possessed but rather forms the space for exercising power through the development of norms and discourses in which actors participate, negotiate, and interact (Digeser, 1992). As Dean (2012) explains, the first three faces of power imply a 'zero-sum' relationship that focuses on power as a possession—the actions of powerful actors subtract power from others. In the fourth 'face', historically and normatively constituted discourses form the background conditions that form subjects and enable/disable the capacity for agency (Digeser, 1992). Constitutive power, as outlined in this study, has not been fully developed within literature on power relations in the agriculture and agrifood industries, particularly as a complement to typologies of power (see

Trowler, 2001; Davies, 2002). Furthermore, previous applications of the concept of constitutive power have not been consistent (see below).

Fuchs (2007) and Clapp and Fuchs (2009) apply a three-dimensional power framework to explore business/corporate power. Insights from their work are utilized throughout this study, but their framework does not fully capture the normative and latent aspects of constitutive power. Andrée (2002; 2007) usefully engages with Foucauldian concepts in the discussion of GMOs, but does not focus explicitly on the concept of power, or the placement of constitutive power in relation to other forms. For this study, constitutive power provides both a fourth dimension in which to extend the three-dimensional power analysis, as well as an overall revisualization of the power framework based on Foucauldian approaches to power and discourse. In order to effectively map out this fourth type of power, this section describes: Foucauldian concepts of power/knowledge and subjectification; an example of constitutive power in practice; and the different uses of the term constitutive power.

Power/knowledge, subjectification, and the concept of 'constitutive power'

Haugaard (2002) uses the term *constitutive power*[16] to describe the type of power being developed in postmodern social theory, wherein "power is frequently perceived of as constituting reality" (p. 4). This view is largely consistent with this study's use of constitutive power, which

[16] Using the term constitutive power in this study also satisfies two pragmatic conditions: (1) the terms 'constitutive', 'constitute', and 'constitution' are consistently used to discussions of this form of power (see Foucault, 1980; Dean, 2012; Digeser, 1992), including what Barnett and Duvall (2005a) refer to as "social relations of constitution", and (2) the term constitutive power aligns well with the descriptive-style terms used by Clapp and Fuchs (2009) for the first three forms/dimensions of power—as opposed to terms such as 'second face' and power4.

borrows from the work of Foucault (1977; 1980; 1984) and Digeser (1992), particularly regarding the concepts of power/knowledge and subjectification. In Digeser's (1992) article "The fourth face of power", he poses the questions: "What is the relationship between knowledge and power?" and "Is it possible that our criteria for meaningfulness and knowledge are themselves the effects of power?" (p. 986). These questions point to Foucault's concept of power/knowledge, and how the two concepts imply one another (Foucault, 1977; 1980). By bringing Foucauldian understandings of power into this discussion, it is possible to extend analyses beyond the activities of actors and organizations, and explore the effects of discourse. As Andrée (2002) describes:

> For Foucault, discourses are politically significant as a form of power (power/knowledge), because they shape the horizon of what makes sense and what does not. (p. 166)

Discourses, in this sense, have a particular influence—certain discourses become prioritized and normalized, creating particular regimes of 'truth'. By adding a deeper discussion of the nature of power, and its relationship with 'Truth' and knowledge, the relationships between/across all four dimensions of power can be examined.

Foucault affixes the concepts of power and knowledge to convey their mutually constituted nature. That is, "there is no power relation without the correlative constitution of a field of knowledge, nor any knowledge that does not presuppose and constitute at the same time power relations"; the negotiation between power and knowledge (power/knowledge) works to determine the possible domains of knowledge (Foucault, 1977, p. 27-28). Put differently, Foucault (1980) states

> The exercise of power itself creates and causes to emerge new objects of knowledge and accumulates new bodies of information. One can understand nothing about economic science if one does not know how power and economic power are exercised in

> everyday life. The exercise of power perpetually creates knowledge and, conversely, knowledge constantly induces effects of power. (p. 51-2)

Though the domains of knowledge regarding economic, natural, and other sciences are intertwined with power, it is also important to examine more closely the role of the subject/individual. As Haugaard (2012) writes: "the fourth dimension of power consists in the process of subjectification" (p. 47).

In his paper 'The Subject and Power' (1982), Foucault states that "it is not power but the subject which is the general theme of my research" (p. 778), and goes on to explain the power in the formation of subjects:

> This form of power applies itself to immediate everyday life which categorizes the individual, marks him by his own individuality, attaches him to his own identity, imposes a law of truth on him which he must recognize and which others have to recognize in him. It is a form of power which makes individuals subjects. There are two meanings of the word "subject": subject to someone else by control and dependence; and tied to his own identity by a conscience or self-knowledge. Both meanings suggest a form of power which subjugates and makes subject to (p. 781)

The formation of subjects incorporates the everyday lived experiences individuals have with laws, rules, procedures, norms, values, and social mores. It involves how certain ideas and identities are imposed on the individual, and how these are built into an individual's consciousness. For examples, Van Dam, Duineveld and During (2015) usefully apply subjectification to analyze citizens' initiatives in the Netherlands. The authors argue that governmental organizations have an effect on citizens' initiatives through discourses on what it means to be a 'good' citizen—citizens' initiatives strategically adapt to more acceptable and normal ways of organizing.

Ryan's (2014) application of the term 'constitutive power' helps to further illustrate the role of the subject/individual. Ryan (2014) applies the term constitutive power to political discussions of collaborative art. Drawing from theorists such as Foucault, Mouffe, and Rancière, Ryan (2014) frames constitutive power as operating through 'subjectivation' (or subjectification)—the formation of subjects "through relational practices and technologies which are constituted by regimes of truth" (p. 378). Exposure to, and analysis of, established 'truth' regimes and their impacts is an important aspect of this study's examination of Canadian agricultural and agrifood debates, for instance, regarding the dominance of neoliberal market rationalities. Furthermore, power/knowledge negotiations and the creation of subjects and truth regimes, relates to the formation of discourse. Examining the constitutive power of discourse is an important aspect of this study's application of a fourth dimension of power.

Also employing the term used in this study, Trowler (2001) and Davies (2002) write on the constitutive power of discourse. This understanding of constitutive power is critical to the analysis of language and text—the ways in which dominant discourses mask alternative understandings, conceptualizations, and definitions. Further, this approach to constitutive power highlights the importance of making "the constitutive force of discourse visible and thus revisable" in order to

> Engage in using language to break open old certainties and generate new ways of speaking/writing, new forms, new images that give a life to previously unimagined possibilities. (Davies, 2002, p. 180)

For Trowler (2001), discourses both reflect and constitute social contexts, they are "constitutive of systems of knowledge and belief, of social relations, practices as well as of social identities" (Trowler, 2001, p. 187). Even though it is applied in the context of higher education discourse in the UK, Trowler's (2001) approach to constitutive power represents an important likeness to this

study's because it relies, in part, on Foucault's approach to power and discourse. It is in Foucault's approach to power, discourse, 'truth', and knowledge, that this study situates the basic meaning of constitutive power.

Constitutive power in practice

One example of constitutive power is the influence of scientific discourse, particularly regarding conventional, reductionist science. Andrée (2005) explains that scientific discourse exercises a form of agency by placing limitations on what makes sense, or what might be viewed as acceptable and confident assertions about the world. Regarding biotechnology, actors without scientific-technical expertise are limited in their capacity to influence policy, regardless of their level of interest in the policy outcome (Andrée, 2005). The discourse of modern science as a component of a larger dominant ideology enables and constrains the capacity for agency—the capacity to possess and exercise power. Bronson's (2014) research on science communication points to such circumstances, stating:

> In *Schmeiser v. Monsanto*, the courts discursively constructed clear boundaries separating laboratory-based scientific expertise from other knowledge, thus affirming regulatory assumptions about what constitutes valid regulatory knowledge, and justifying the continued exclusion of publics from biotechnology decision-making. (p. 532-533)

Constitutive power is well suited for examining, for example, the role of historically formed normative assumptions like the primacy of modern scientific reasoning. To fully understand the constitutive power of scientific reasoning it is necessary to consider the circular nature of power-knowledge. The privileged position of modern scientific knowledge is a function of powerful actors, rooted in the traditions of the Enlightenment. Conversely, the powerful position of

scientific experts is based on preconceived ideas of what scientific reasoning is in relation to other forms of knowledge. The examination of norms, values and discourses forms an important basis of this dissertation, and the concept of constitutive power is important for extending understandings of power, as well as contributing to a more nuanced view of the first three dimensions.

This conceptualization of power is useful as an addition to the other three dimensions, and I suggest all four are valuable and necessary tools for exploring and uncovering power relations within agri-biotech governance. Each dimension exposes a different aspect of social relations that must be examined to uncover an extensive understanding of power relations in a given context.

Other authors using the term 'constitutive power'

The ways in which constitutive power is conceptualized by different scholars are not completely consistent, and several applications of constitutive power do not reflect the understanding applied in this study. While some authors position constitutive power as possessed and deployed by actors, such as the state (see Avelino & Rotmans, 2009; 2011; Browning & Christou, 2010; Neocleous, 1996), others view constitutive power as embedded in socially and historically developed norms and discourses (see Davies, 2002; Jennings, 2011; Kiersey, 2008; Read, 1999; Ryan, 2014; Rye, 2014; Trowler, 2001). The present study adopts the latter view. By exploring some of the differences held by the other views, this study's approach to constitutive power is further illuminated.

The works of Browning and Christou (2010) and Neocleous (1996) provide useful illustrations of how constitutive power has been adopted from a zero-sum power perspective, and discussed as a form of power deployed by states/state actors. An example from political geography, Browning and Christou (2010) discuss "the constitutive power of outsiders" when analyzing the European Neighbourhood Policy (ENP) and the EU's relationship with Belarus and Ukraine (p. 109). Their use of constitutive power is arguably a combination of (mainly) structural and discursive power; these countries are examined with regard to their capacity to achieve certain goals through structural and discursive strategies. These 'marginal'/'outsider' states attempt to benefit from their constructed identities by, for instance, "positioning the margin as an important boundary between two competing centres' spheres of influence", such as a communication medium between Russia and the EU (Browning & Christou, 2010, p. 111). Neocleous (1996), offering a Marxist-Hegelian theory of the state, suggests the state holds constitutive power over civil society, and seeks to maintain the dichotomous distinction and historical categorization of the state and civil society. As this approach positions the state as actively shaping the contours of civil society (Neocleous, 1996, p. 4), it is disjointed from the conceptualization of constitutive power pursued here, which examines this power as outside the actions of agents, including the state. The present study adopts a view of constitutive power as something that is embedded and disconnected from the agency of actors.

Rye's (2014; 2015) discussion of power and political parties represents an application of constitutive power that is, in part, consistent with this study's approach. Rye (2014) describes constitutive power as "embedded in the day-to-day unreflective actions and activities of party life" which "works to reinforce and reproduce social structure" (p. 128). This approach to constitutive power stems from Anthony Giddens' interrelated and co-constitutive

conceptualization of social structure and agency, as well as Pierre Bourdieu's notion of *habitus*. Rye (2014) reserves the term 'disciplinary' power for Foucauldian discussions of power, focusing on the controlled and self-disciplined activities embedded in individual behaviour. Though parallels can be drawn between the use of constitutive power employed in this study and Rye's work, it is the aforementioned literature on the formation of subjects and the constitutive power of discourse that provides applications of constitutive power that are the most complementary to the present study.

Finally, Barnett and Duvall's (2005a; 2005b) notable contributions to literature on power are worth noting, specifically their typology on power in global governance from an international relations perspective. Their framework includes two forms of power that work through "social relations of constitution", a direct and specific kind (structural power) and a more generalized and diffuse (productive power) (see Barnett & Duvall, 2005a, p. 12-20). The concept of productive power utilizes insights from Foucault. Several authors employ Barnett and Duvall's power framework in their edited volume Power in Global Governance (2005a), including Laffey and Weldes discussion of neoliberal discourse in the context of globalization. In their chapter, Laffey and Weldes (2005) use the concept of productive power to examine the ways neoliberal discourses of globalization dominate "both political and economic discussions of the contemporary world order" (p. 63). This two-level conception of "social relations of constitution" is loosely equivalent to this study's application of constitutive power. The way in which this form of power is framed is less suitable for the present study's examination of discourse, which requires categories that are more specifically delineated. Overall, general insights from Barnett and Duvall (2005a; 2005b) are drawn from throughout the dissertation as a useful and effective source regarding conceptualizations of power.

CONCLUDING REMARKS

The four-dimensional power framework described here is applied in this dissertation in order to extensively outline the power relations prevalent in discourses on Canadian agriculture and agrifood. This framework is not meant to be a critique of similar (or dissimilar) power frameworks, or a review of the varying theories on power. The purpose of this framework is to carefully model a typology on power that is well-suited for viewing, understanding, and analyzing power within public discourse as applied to my case studies. Table 1 (see below) provides an initial representation of the power framework utilized in this dissertation. The fourth-dimension, constitutive power, is positioned below the first three dimensions of power to represent what Foucault (1980) describes as "the concrete, changing soil" in which power is grounded (p. 187). It represents the background conditions that make up actors' capacities to deploy/exercise instrumental, structural and discursive forms of power. Remarks on the suitability and efficaciousness of this power framework, based on the three case studies that make up the core of this dissertation, are discussed in the Conclusion, Chapter 7.

Table 1: Four dimensions of power

Instrumental	**Structural**	**Discursive**
Direct, explicit action. Actors exercise power through a deployment of resources to achieve certain ends/goals.	Indirect, explicit action. Actors exercise power by creating or reinforcing mechanisms which limit the power capacities of other actors.	Indirect, implicit action. Actors exercise power by framing issues in ways that benefit their overall aims.
Constitutive		
Constitutive power forms the space for exercising power (instrumental, structural, and discursive) through the historical and cultural development of norms and discourses in which actors participate, negotiate, and interact (see Digeser, 1992).		

CHAPTER 3

METHODS AND DATA: DESIGN, COLLECTION, ANALYSIS, AND VERIFICATION

> *The proposed approach is conceived as spiraling rather than linear in its progression. In the proposed approach, you begin with an idea, gather theoretical information, reconsider and refine your idea, begin to examine possible designs, reexamine theoretical assumptions, and refine these theoretical assumptions and perhaps even your original or refined idea. Thus, with every two steps forward, you take a step or two backward before proceeding any further. What results is no longer a linear progression in a single, forward direction. Rather, you are spiraling forward, never actually leaving any stage behind completely.*
>
> -Bruce L. Berg[17]

This project engages qualitative methodology and methods, and has truly "spiraled forward" through an iterative progression of several research stages. Since the beginning of this project, it has been clear that the socio-political state of Canadian agriculture and agrifood policy is a wellspring of debates, perceptions, ideologies, and ideas. This wellspring is, in part, a product of the innumerable farm, food, and environmental organizations; sustainable methods of farming (as well as eating); and national, international, and global regimes aiming to achieve

[17] Excerpt from Bruce L. Berg's (2001) *Qualitative Research Methods for the Social Sciences (4th Edition)*, page 18.

sustainability and security vis-à-vis agriculture and food. As Berg (2001) writes, “every research project has to start somewhere; typically, the starting point is an idea” (p. 16). The idea where this project begins is the need, empirically and theoretically, for a clearer understanding of the contested discourses of Canadian agriculture and agrifood.

Among the developments across the Canadian agricultural landscape during the progression of this research project (2013 to 2016) were two key issues that are central to this project: national resistance campaigns against GM alfalfa, and the introduction of Bill C-18, the *Agricultural Growth Act*. A common thread between these cases is power, the diverse relations and contexts that work to influence the actions, perceptions, and intentions of the varying actors and organizations involved in Canadian agriculture. A key intention of this project is elucidating some of the more nuanced aspects of power in Canadian agricultural policy development, particularly with regard to biotechnology and plant breeding. As Foucault (1978) notes, “power comes from below”, and therefore power relations should not be analyzed exclusively as a binary between the rulers and the ruled. Power relations are complex and diverse, emanating throughout the social body.

Of specific interest and focus are the diverse range of discourses that inform the views, opinions, and actions of actors and organizations involved in the future direction of agricultural policy and regulation. How are these discourses utilized? How do they relate to power? And what effect do discourses have in policy development? Foucault’s (1978) method (as explained in his book *The History of Sexuality*) comprises a questioning of discourses on two levels, the first being “what reciprocal effects of power and knowledge they ensure” and the second, “what force relationship make their utilization necessary in a given episode” (p. 102). Put differently, we must analyze discourses with regard to their role in the production of power and knowledge,

as well as the manner in which discourses are strategically deployed. Paying particular attention to discourse (and its relationship with power), this chapter details the research study's methodology, methods, and data—that is, it outlines the general approach taken to study the topic (i.e. qualitative methodology), the specific research techniques employed, and a discussion of what information was gathered and studied.

METHODOLOGY AND RESEARCH DESIGN

The methodology and methods employed in this study fall under the paradigm of qualitative research[18]. According to Auerbach and Silverstein (2003), "qualitative research is research that involves analyzing and interpreting texts and interviews in order to discover meaningful patterns descriptive of a particular phenomenon" (p. 3). For this study, the phenomenon under investigation is Canada's agriculture and agrifood sector, with an emphasis on current debates and events regarding seed politics and agricultural biotechnology. The theoretical approach on power, knowledge, and discourse outlined in Chapter 2 informs the methodological directions of this study. In Taylor, Bogdan, and DeVault's (2015) view,

> Our assumptions, interests, and purposes shape which methodology we choose. When stripped of their essentials, debates over methodology are debates over assumptions and purposes, over theory and perspective. (p. 3)

To place this study within one of the two major social scientific theoretical perspectives outlined by Taylor, Bogdan, and DeVault (2015), this study can be described as being rooted in

[18] Though grounded in a qualitative research paradigm, it is important to note that this study applies quantitative research methods throughout the processes of data analysis. Compiling qualitative data into numerical figures, charts, and diagrams was found to be particularly advantageous for illustrating larger patterns and connections.

phenomenological traditions (as opposed to positivism)—focusing on understanding phenomena from the varied ways the world is perceived and experienced. More accurately, this study can be situated within the perspectives of postmodernism and post-structuralism which emphasize the social construction of 'truth' claims and challenge "the authority of science as well as the idea of an all-encompassing master narrative, and examines the ideological underpinnings behind any text, including those we call scientific" (Taylor, Bogdan, & DeVault, 2015, p. 18). Research by Tomlinson (2010; 2011) represents a likeminded approach to analyzing discourses of agriculture and agrifood policy. Tomlinson utilizes conceptual tools that examine framing and discourse to explain the ways in which actors' beliefs and actions construct certain social contexts. For example, Tomlinson (2011) examines how statistics regarding food production levels are utilized within dominant discursive frames that emphasize a particular construction of global food security. The present study emphasizes the roles of power and discourse within Canadian food and agricultural politics, focusing on three different case studies.

Following Berg's (2001) description, this project adopts a case study approach which involves "systematically gathering enough information about a particular person, social setting, event, or group to permit the researcher to effectively understand how it operates or functions" (p. 225). Further, Ritchie, Lewis, Nicholls, & Ormston, (2013) explain that a distinctive feature of a case study is the exploration of multiple perspectives to examine a particular context. This study explores particular sites or contexts of discourse to develop a better understanding of power relations within Canadian agriculture and agrifood, and how these relations interact with discourse. The case study selections are based on discursively relevant contexts and time periods, or "critical discourse moments" (see Carvalho, 2008; Maeseele, 2013). For this thesis, three separate case studies on the topic of Canadian agricultural and agrifood policy have been

selected: (1) pro-biotech publicity versus anti-biotech campaigns (Chapter 5); (2) Bill C-18, the *Agricultural Growth Act* (Chapter 6); and (3) GM alfalfa in Canada (Chapter 7). As a group, it may be valuable to consider these cases as 'maximum variation cases', selected through a type of information-oriented case selection that Flyvberg (2006) describes as "cases that are very different on one dimension" and useful for gathering "information about the significance of various circumstances for case process and outcome" (p. 230). Each case represents different forms of discourses, including publicity materials, parliamentary proceedings, and news reports. All three case studies inform the broader research focus of elucidating the nuanced power relations within Canadian agricultural politics, specifically with regard to biotechnology and plant breeding. Further details on these three cases are outlined below in the sections on "Data collection" and "Data analysis".

Abductive reasoning

In terms of the methodological principles guiding the methods of data analysis, *abduction* is utilized to complement this study's theoretical approach. The intention is to examine a given issue through applications (and re-applications) of both theory and method in an iterative and cyclical process in order to develop the best possible insights, ideas, and explanations. According to Timmermans and Tavory (2012), "abductive analysis is a qualitative data analysis approach aimed at generating creative and novel theoretical insights through a dialectic of cultivated theoretical sensitivity and methodological heuristics" (p. 180). A robust review of theoretical literature on power, from a variety of disciplines (i.e. sociology, political science, philosophy,

international relations), informs the methodological process. As Timmermans and Tavory (2012) point out:

> Where theories allow us initially to see the phenomenon in sociologically interesting ways, methods are designed to compel us to revisit the same observation again and again, defamiliarizing the known world, and applying alternative casing to our observations (p. 176).

Rigorous, iterative methods of analysis, which includes detailed coding procedures, as well as stages of "applying alternative casings", allows for opportunities for theory innovation. A "recursive process of double-fitting data and theories" can help to "identify changed circumstances, additional dimensions, or misguided preconceptions" (Timmermans & Tavory, 2012, p. 179). Put differently, abduction can be thought of as both working from specific observations to develop more general principles and conceptual explanations (inductive reasoning) as well as approaching observations from a pre-determined conceptual framework (deductive reasoning). Importantly, this combined approach is circular and iterative, with neither type of reasoning taking priority—the purpose is to achieve the most suitable explanations as well as theoretical innovations. Although the general, inductive approach to grounded theory is traded for the abductive process outlined above, the specific methods and stages of coding developed by key proponents of grounded theory (see Strauss, 1987) are adopted in this study for their clear and effective steps for data analysis[19].

[19] These coding procedures are detailed in the section on "Data analysis".

Discourse battle and not discourse reflection

Abductive reasoning is adopted as an effective tool for exploring the relationship between power and knowledge in a range of discourses regarding Canadian agriculture and agrifood. In applying abductive reasoning, this approach considers Foucault's (2003) statement: "Discourse battle and not discourse reflection" (p. xx). Put differently, discourses are not merely a reproduction of particular ideas, signs, and meanings; discourses bring about effects through the co-constitutive relationship between power and knowledge. As outlined in Chapter 2, Foucault's concept of power-knowledge contributes to this study's understanding and approach to discourse and discourse analysis.

According to Foucault (1978), "it is in discourse that power and knowledge are joined together. And for this reason, we must conceive discourse as a series of discontinuous segments whose tactical function is neither uniform nor stable" (p. 100). Stirling (2008) effectively captures the importance of building pluralistic discourse in discussing the social appraisal of new technologies. What Stirling (2008) proposes is that instead of 'closing down' wider policy discourses to assist decision-makers by providing the 'best' options (through an effective choice in methods, research questions, etc.); it may be more fruitful to pursue a process of technology choice through 'opening up'. Here, Stirling (2008) explains,

> The emphasis lies in revealing to wider policy discourses any inherent indeterminacies, contingencies, or capacities for agency. The aim is then to examine the degree to which results obtained in appraisal are sensitive to different framing conditions and assumptions. Instead of focusing on unitary prescriptive recommendations, appraisal poses alternative questions, focuses on neglected issues, includes marginalized perspectives, triangulates contending knowledges, tests sensitivities to different methods, considers ignored uncertainties, examines different possibilities, and highlights new options.

For Stirling (2008), a key aspect of this 'opening up' approach is the empowering of human agency in decision-making on new technologies. This approach to policy discourses is important for countering varied power relations which may privilege technological progress over participatory deliberation.

Powerful actors are able to influence discourses, including how topics and ideas are understood and discussed. At the same time, discourses also have their own impacts. This understanding of power, knowledge, and discourse is valuable for exploring the nuances of publicity, political, and media discourse. Further, it is an effective approach for discussing the dominating and marginalizing effects of power, while also paying attention to power's productive and subversive nature. As Foucault (1978) states,

> We must make allowances for the complex and unstable process whereby discourse can be both an instrument and an effect of power, but also a hindrance, a stumbling-block, a point of resistance and a starting point for an opposing strategy. Discourse transmits and produces power; it reinforces it, but also undermines and exposes it, renders it fragile and makes it possible to thwart it. (p. 101)

Jørgensen and Phillips (2002) engage Foucauldian theory to explain that power and discourse share commonalities—instead of belonging to individual actors or organizations, power (and discourse) "is spread across different social practices"; power can be both oppressive and productive, constituting "discourse, knowledge, bodies and subjectivities" (p. 13). Researchers drawing on Foucault's approach to discourse include Davenport and Leitch's (2009) exploration of the discursive strategies and practices in agri-business, and Springer's (2012) use of Foucault's concept of governmentality to advance the understanding of neoliberalism as a discourse. Furthermore, in the context of GMO politics, Andrée (2007) combines insights from Gramsci's approach to hegemony and relations of force with Foucault's approach to discourse.

Important to this study, he applies Foucault's work to examine the ways discourses produce certain outcomes by defining what makes sense in a given context. An analysis of discourse, using Foucauldian insights, helps elucidate the diverse nature of power.

DATA COLLECTION

Documentary research materials comprise the core data used for discourse analyses. These materials were compiled for each of the three cases: Case 1, on online GMO campaigning, focuses on the campaign materials from key Canadian "pro-biotech" and "anti-biotech" sources; Case 2, on Bill C-18, focuses on parliamentary debates (as reported in Hansards) in both the House of Commons and Senate; and Case 3, on Canadian news media coverage of GM alfalfa protests. Data was also collected through scoping interviews with key informants who provided invaluable details not otherwise available, and allowed for a degree of methodological triangulation (discussed in the "Validation and verification" section below).

Documentary data: News articles, parliamentary debates, and publicity materials

Case 1: Pro-biotech publicity and anti-GMO campaigns

A total of 36 individual pieces were compiled for this investigation (see Appendix I). The unit of analysis was limited to materials directed at the Canadian public by organizations and/or networks mandated to inform the public about agricultural biotechnology, specifically the Council for Biotechnology Information (CBI) and the Canadian Biotechnology Action Network

(CBAN). CBAN is a relatively small organization that is constantly active across the country, collaborating with other organizations like the National Farmers Union to inform Canadians and represent a voice opposing agricultural biotechnology. The CBI is a Canadian based public relations organization comprising six very large transnational companies including Monsanto and Dupont, all of which have active registered lobbyists in Canada as of 2014 (Office of the Commissioner of Lobbying of Canada 2013). Also, CBI's U.S. Site (gmoanswers.com) is dedicated to answering questions from the public about GMOs (GMO Answers 2014).

All materials were collected via relevance sampling (also called purposive sampling); using key words and targeting the websites and publications of the CBI and CBAN allowed for a systematic isolation of relevant materials (see Krippendorff, 2012). This method of sampling is valuable for reducing the number of possible texts for analysis to a manageable number (Krippendorff, 2012). Sampling was performed on web search engines (e.g. Google) and the respective websites of the CBI and CBAN. Web materials, including advertisements, brochures, pamphlets, booklets, web pages and downloadable documents were compiled; audio or video materials were not included. A temporal boundary was used to restrict the collection of materials to items published after 2010, helping to ensure the most relevant discourse was examined.

Case 2: Bill C-18, the Agricultural Growth Act

A total of 32 individual documents were compiled for this case study (see Appendix II). The unit of analysis was limited to materials published from Canada's 41st Parliament, 2nd Session Sittings and Meetings of the House of Commons and Senate for Bill C-18, the *Agricultural Growth Act*. Among these materials are: 11 transcripts (Hansards) from Chamber Sittings of the

House of Commons, which is where the Bill is initially introduced to Parliament; 7 Committee Meeting reports from the House of Commons Standing Committee on Agriculture and Agri-food; 6 transcripts (Hansards) from Chamber Sittings of the Senate; and 5 Committee Meeting reports from the Standing Senate Committee on Agriculture and Forestry. Chamber Sittings comprised statements and debates from Members of Parliament (MPs), and Committee Meetings included statements from invited witnesses that represented various government, farm, and civil society organizations. These sittings and meetings took place from December 9, 2013 to February 25, 2015. All materials were collected from the Parliament of Canada website (www.parl.gc.ca). In addition to the written transcripts of these proceedings, audio recordings and video recordings were reviewed when available and pertinent to the analysis.

Case 3: GM alfalfa protests in Canadian news

A total of 88 individual news reports were compiled for analysis. The unit of analysis was restricted to English language Canadian news coverage on the topic of GM alfalfa. Materials targeted for this study include all online Canadian news articles[20] relating to GM alfalfa, for a period of 4 years (April 2011 to April 2015). The rationale for this time frame is to effectively capture the state of Canadian public news from two years prior until two years after the 9 April 2013 "Day of Action" against the introduction of GM alfalfa in Canada. This event marks a key point within the timeline of resistance against this crop.

[20] To be considered a "news article" the piece had to appear on the website of an online publishing medium whose content focused almost exclusively on current news events, i.e. *The Western Producer*

Materials were compiled using Internet search engines, individual news websites, and CBAN's report on the media coverage of the protests (CBAN, 2013b). Many articles were found through an extensive online search through "Google News", "Bing News", "Yahoo News Canada", and the University of Waterloo Library's "Primo" search engines. Key words used to find articles included: "GE alfalfa", "GM alfalfa", "genetically engineered alfalfa", and "genetically modified alfalfa". In addition to the use of search engines, several other articles were found through mining individual Canadian news websites, such as *The Western Producer*. For the purpose of setting specific boundaries on which documents were included, only articles with a primary focus on GM alfalfa in Canada were included; articles focused on GMOs in general, as well as articles focused on GM alfalfa in the U.S., were excluded.

Interview data

A total of 23 interviews were conducted for this study. In-person interviews, as well as telephone and Skype interviews were conducted; telephone and Skype interviews were utilized when geographic distance prevented participants from being interviewed in person, and when participants requested it out of personal preference. The interviews are best considered 'scoping interviews' because they were conducted in an early stage of the research project, and led to careful refinements and reconsiderations of the research direction and outlook (Robertson *et al*., 2012). In light of this, interview material is not extensively quoted within the present text, but was instrumental for understanding the varying contexts, ideas, and perspectives being studied which helped with research project design as well as analysis. The interviews were conducted using "lightly structured depth interviewing", distinguished by a tentative questioning style that

allows the researcher to learn from the participant (Wengraf, 2001). Interviewing was chosen for its usefulness in examining "the context of thought, feeling and action" and the "relationships between different aspects of a situation" (Arksey & Knight, 1999). Overall, scoping interviews provided essential information and insights to guide and support the core methodological focus of this research project, which is discourse analysis.

A site-based approach utilizing a combination of purposive and snowball sampling comprised the means for participant recruitment (Arcury & Quandt, 1999). Purposive sampling is necessary for generating a deeper understanding of a topic by selecting participants with important insight and knowledge on a topic (Braun & Clark, 2013). Purposive sampling is usefully combined with snowball sampling, as participants selected with particular characteristics are able to recommend additional interviewees with the same characteristics (Seale, Gobo, & Gubrium, 2004). This method of recruitment allows for the purposive identification and selection of specific sites (for instance the National Farmers Union) and the recruitment of recommended participants from interviewees and site gatekeepers (i.e. an organization director) (Arcury & Quandt, 1999). Interviewees were given the opportunity to provide feedback on all interview content considered for inclusion[21].

[21] To ensure data compiled from interviews sufficiently represented the opinions and experiences expressed by participants, interviewees were given the opportunity to provide feedback on all interview content considered for inclusion. Paraphrased content and direct quotations considered for inclusion in the written outputs of this research project were returned to interviewees, who were given anywhere from 7-14 days to review and comment on these materials, and provided more time if requested. This process is referred to as "member validation" or "member checks", and is useful for ensuring the validity and representativeness of research findings by allowing interviewees to approve of, or modify, the way in which their views and opinions are presented (Seale, 2012).

DATA ANALYSIS

Data analysis, according to Babbie (2010), aims at discovering "patterns among the data, patterns that point to theoretical understandings of social life" (p. 400). Data analyzed for this research project can be divided into two categories: data-as-topic and data-as-resource (Byrne, 2012; Prior, 2008). Documentary data (news articles, parliamentary debates, and campaign/publicity documents) were analyzed both "as-topic" and "as-resource", meaning data are analyzed for *what* information is included in the documents (as-resource), as well as *how* the information is communicated (Byrne, 2012; Prior, 2008), which includes an analysis of intention, audience and rhetoric (as-topic). This was completed using methods of discourse analysis (detailed below). Interview data were only analyzed "as-topic"; considering interview data as-topic was seen as sufficient for the purposes of this research as interviewees' vocalized experiences and opinions are the focus of the interviews, and not their particular modes of communication (e.g. humour, sarcasm, etc.).

Methods of discourse analysis

This study understands discourse as intricately tied to power. Discourses can be forms of speech and inscription, but the can also bring about effects (Foucault, 2003). That is, discourses exist as texts, conversations, and signs, but can also inform the actions of actors and demarcate the value of particular knowledges. For Norman Fairclough (2001), "discourses are diverse representations of social life which are inherently positioned – differently positioned social actors 'see' and represent social life in different ways, different discourses" (p. 123). This relates to

subjectification, the formation of subjects based on everyday thoughts and interactions. As such, discourse should be analyzed for their basic textual meaning, but also for the context regarding the social actors interacting with a given discourse, as well as the effects that result from a discourse's position within relations of power.

As discourse is understood here to include a range of communicative acts, which not only includes written text, but images and typographical layouts as well (van Dijk, 2001), the discourse analysis performed for this project reviewed a number of components (e.g. images and layout) outside of the specific text in each document. As a means for comprehensively examining the use of language, discourse analysis provides an effective method for illustrating the ways many aspects of society are constituted in written and spoken language (Traynor, 2006). According to Tonkiss (2012), "discourse analysis draws on more general approaches to handling and coding qualitative data" (p. 413); as such, methods of thematic coding were performed as the preliminary analytic process for all documentary data. This was done as a means to "locate key categories, themes and terms" to help better manage the data and systematize the analytic process" (Tonkiss, 2012, p. 413). Phases of open coding, axial coding and selective coding offered sufficiently broad coverage of documentary data, and the subsequent isolation of key themes (Strauss, 1987). Initial coding procedures (often referred to as open coding) proceeded as the first step, reading the transcripts in their entirety and pulling out broad, extensive themes (Strauss, 1987). Axial and selective coding procedures followed the initial round of coding to find patterns, condense themes, and finalize focused categories (Strauss, 1987). Finalized categories and patterns are used to explain and examine key findings.

The methods of discourse analysis used in this study focus on Ruiz Ruiz's (2009) sociological discourse analysis, but draw from critical discourse analysis as well (see Jäger, 2001; Fairclough, 2001; 2013). Discourse analysis is conducted in three iterative phases:

1) *Textual analysis* involves looking at the wording, metaphors, and other grammatical elements of a text (Jørgensen & Phillips, 2002). According to Ruiz Ruiz (2009), textual analysis "involves characterizing or determining the composition and structure of the discourse" and involves an analysis of rhetorical figures, lexis, verb tenses, etc. (p. 5). The repetition of particular terms (e.g. 'scientific'), and the use of passive language are examples of what is examined in this phase. Key themes and thematic areas included and excluded, presentation, layouts, and headings/subheadings are among the structural components analyzed in this phase. This phase involves the initial analysis of actors' arguments, positions, and ideas; the following two phases examine more external conditions regarding the context of these arguments and potential sociological interpretations.
2) *Contextual analysis* involves outlining the context of the material being analyzed; including considerations of authorship, audience and dissemination. It is a review of the time and space in which discourses emerge and gain their meaning (Ruiz Ruiz, 2009). This phase of analysis can involve frame analysis, which "holds that the local norms governing everyday interactions must be accounted for in order to understand and explain social action" (Ruiz Ruiz, 2009, p. 8). What contexts and discursive strategies make some information more noticeable and meaningful is an important aspect of this stage (see Entman, 1993).

3) *Reflective/reflexive analysis and sociological interpretation* "involves making connections between the discourses analyzed and the social space in which they have emerged" (Ruiz Ruiz, 2009, p. 25). Methods of structural analysis are incorporated as part this stage, which focuses on the order of discourse— the "precondition for and constraint on textual action" (Fairclough, 2013, p. 176). This involves what Fairclough (1992) refers to as intertextual analysis, which considers the range of discourses and narratives available to the producers and interpreters of a given text, based on particular social circumstances. This is a particularly important part of the analysis, and provides the means for examining, for example, the connections between power relations and dominant normative assumptions. This phase of analysis involves the overall/final interpretation of discourse, but takes place throughout the phases of textual and contextual analysis as well—"analysis is conducted in a constant and bidirectional manner among these three levels" (Ruiz Ruiz, 2009, p. 25).

VALIDATION THROUGH TRIANGULATION

Triangulation is a common means for studies to ensure a degree of validity and consistency in research findings. According to Spicer (2012), the "triangulation of methods is an approach to combining two or more quantitative and/or qualitative methods in addressing a research question in order to cross-check results for consistency and to offset any bias of a single research method" (p. 484). Going even further, Denzin (1970) explains that "it is convenient to conceive of triangulation as involving varieties of data, investigators, and theories, as well as methodologies" (p. 301). However, Seale (2004) explains triangulation is "a metaphor derived from surveying and navigation to indicate the convergence of two or more viewpoints on a single position" and

"is treated with skepticism by non-realists who reject the view that revelation of a single truth is the object of a research account" (p. 601). Consistent with Seale's argument, this study acknowledges the value of triangulation, not for converging on an identifiable "truth", but for producing a strong, thorough account of the cases through the inclusion of varying perspectives, methods, and media.

This study benefits from several different types of triangulation. Methodological triangulation is realized by combining interview materials with discourse analyses of documentary materials. Data triangulation is achieved in this study through the use of three different types of documentary data—news articles, parliamentary documents, and online campaign/publicity materials (as well as interview data). Conducting this research study across three types of discourse/documentary data meant the theoretical approach to power was engaged with in different contexts. As Denzin (1970) explains, "by triangulating data sources, analysts can efficiently employ the same methods to maximum theoretical advantage" (p. 301). Additionally, theoretical triangulation is made possible through the study's abductive approach (see above); which involves "pushing the data against existing theories" to develop theoretical innovations through an iterative dialogue between data and theory (Timmermans & Tavory, 2012, p. 179). A range of theoretical literature on power is utilized in this study to add to understandings of power relations within Canadian agricultural and agrifood sectors. Together, these strategies are termed "multiple triangulation", as Denzin (1970) explains, "by combining multiple observers, theories, methods, and data sources, sociologists can hope to overcome the intrinsic bias that comes from single-method, single-observer, single-theory studies" (p. 313). This form of triangulation is suitable for this type of qualitative research, as the purpose is to develop valuable new insights for understanding the phenomena being studied, and not to

uncover facts or develop an inclusive theory. Overall, multiple triangulation offers a strong basis for ensuring a degree of validity and consistency in this study's research findings.

CHAPTER 4

Pro-biotech public relations versus the anti-GMO movement: An analysis of power and discourse in Canadian agri-biotech debates

It has been 20 years since Canada's first commercially grown genetically modified (GM) crops were approved and debates over these contentious products continue to gain momentum. Literature exploring Canada's GM debates has yet to focus specifically on the discourse of pro-biotech public relations campaigns and anti-GMO movements. This paper helps fill this gap with an analysis of power relations regarding efforts to inform public opinion on the topic of agricultural biotechnology. This paper explores these power relations in two arguments. First, I argue that the Canadian state's overall positive position toward agricultural biotechnology provides leverage to pro-biotech public relations, while helping to determine the direction of anti-biotech campaigns, in effect reinforcing pro-biotech discourse in Canada. Second, I argue that the potency of pro-biotech frames are constituted and sustained by historically and culturally embedded norms and values, while anti-biotech campaign materials are enveloped and limited by these conditions. These findings uncover a clearer picture of the complexity of power relations within agri-biotech discourse, and the extent to which anti-biotech groups are disadvantaged in these debates.

INTRODUCTION

Twenty years since the first commercial approvals, agricultural biotechnology remains in a state of serious contention both in Canada and around the world. Controversy continues to rage over the potential issues posed by genetically modified (GM)[22] foods and crops, including impacts to human and animal health, the environment, and the agri-food market (Kondoh & Jussaume, 2006). Policy development as well as consumer and market acceptance are all impacted by the known and/or perceived risks and benefits of agricultural biotechnology. As public policy for GMOs has developed, so too have the ways in which GMOs are framed and discussed. In an effort to explore connections between these discourses and wider power relations regarding GMO policy, this paper examines the framing strategies within pro-biotech public relations discourses and anti-biotech campaign discourses.

Powerful organizations such as the Council for Biotechnology Information (CBI)[23], which represents companies including Monsanto and Bayer CropScience (CBI, 2011j), use various campaign strategies to inform the public about the importance and benefits of biotechnology. Organizations such as the Canadian Biotechnology Action Network (CBAN)[24]

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[22] "Genetically modified" (GM) is the preferred term used in this paper to refer to plants that are also referred to as genetically engineered (GE), transgenic, and living modified organisms (LMO). All of which can be considered methods of agricultural biotechnology. GM crops are identified as developed through breeding processes that do not naturally occur. See CFIA (2007) for a detailed explanation of these terms.

[23] The Council for Biotechnology Information is a "NAFTA-aligned, non-profit association" with individual websites for biotech information regarding the United States, Canada and Mexico (CBI, 2011i). Only the Canadian (English) site is examined here in depth.

[24] CBAN is a network made up of 16 members, who include: Canadian Organic Growers, GE Free Yukon, No More GMOs Toronto, and the Saskatchewan Organic Directorate.

oppose these efforts, pointing to the risks of genetically modified organisms (GMOs) and questioning the claims of biotech supporters. Important insights can be gleaned through an analysis of materials (such as advertisements, brochures, and factsheets) from both sides of the debate that represent the sorts of messages Canadians receive regarding agricultural biotechnology. Analysis of these documents reveals how complex power relations impact the manner in which discourses are produced and utilized.

Anti-biotech campaigns have been successful in Canada on numerous occasions, but these victories appear to be localized 'wins' within the relatively unchanged Canadian GMO policy. While several GM products have been successfully blocked from entering Canada's market, there remains a strong pro-GM industry and regulatory system in the country. What factors might explain the definite, but overall limited, success of anti-biotech efforts? This article operationalizes a multiform approach to power to explore the language, contexts, and social relations influencing debates over GMOs vis-à-vis campaign and publicity materials. The purpose is to expose under-acknowledged conditions and characteristics within GMO debates to help explain the embedded power structures supporting pro-biotech discourses, and the ways in which discourses influence the overall successes and limitations of anti-biotech campaigns. These campaigns are a main force pushing back against the current power structure within the Canadian agri-biotech sector, wherein a key task may be to disrupt the current emphasis on technological competitiveness and economic growth.

A discourse analysis of 36 documents (campaign reports, flyers, etc.) reveals two key findings regarding power relations (both overt and underlying) in Canada's agri-biotech sector: (1) the Canadian state's overall positive position toward agricultural biotechnology is influential in providing discursive leverage to pro-biotech publicity materials while predisposing and

delimiting the directions of anti-biotech campaign materials, and (2) pro-biotech frames are attached to popular values and constructed within historical, cultural, and normative understandings of "truth" production, which increases their resonance; meanwhile anti-biotech campaign materials appear stymied by the same conditions. These findings help illustrate the complexity of power relations within agri-biotech discourse, and the extent to which anti-biotech groups are disadvantaged in these debates. The below analysis of both pro-biotech publicity materials and anti-biotech campaign materials is meant to fill a gap in Canadian research on GMO media and discourse analysis, as well as contribute to wider discussions regarding power and biotechnology. This article closes with visions for future praxis—I argue that these anti-biotech campaigns, if they mobilize the deconstruction of structural, discursive, and normative obstacles, could help to build a stronger platform for recognizing, exposing, and dismantling key power imbalances.

POWER AND LANGUAGE IN GMO DEBATES

After 20 years of debate over GMOs, much of the discourse surrounding agricultural biotechnology remains embedded in binary divisions such as safe/not-safe, sustainable/ unsustainable, necessary/unnecessary, and so forth. For instance, a key debate over the value and necessity of agricultural biotechnology is over its capacity to feed a growing population—GMOs are either capable of feeding eight billion people in 2025 (Borlaug, 2004), or this capability is mostly rhetoric designed to both maintain the illusion that GMOs are needed and to mask their overall failures in addressing global hunger (Chopra, 2015). Such socio-political divisions are interlaced with scientific research, which often becomes more divisive through the

translation and communication of scientific research in varying mediums, for instance pro-biotech public relations materials and anti-biotech campaign materials. Importantly, when referring to 'scientific research', the discursive deployment of claims over 'scientific expertise', and the underlying normative privilege ascribed to science-based information, it should be understood that the focus is on conventional, reductionist forms of science as opposed to more complexity oriented approaches[25].

Research on GMO safety has focused on either demonstrating that GM foods and crops are *as safe as* conventionally made foods and crops, or establishing the need for additional research due to remaining uncertainty and complexity. Scientific research, particularly since 2006, has examined the safety of genetically modified foods, including issues of toxicity, adverse effects, and health risks, and displays "a certain equilibrium in the number of research groups suggesting, on the basis of their studies, that a number of varieties of GM products (mainly maize and soybeans) are as safe and nutritious as the respective conventional non-GM plant, and those raising still serious concerns" (see Domingo & Giné Bordonaba, 2011, p. 741). More recently, Hilbeck *et al*. (2015) contributed to the discussion by claiming that no scientific consensus on GMO safety has been reached. Adding to this debate, the United States' National

[25] By complexity oriented approaches, I am referring to approaches that move past the reductionist approaches of the 'modern model' wherein "science informs policy by producing objective, valid and reliable knowledge" (Funtowicz & Strand, 2007, p. 263). Among these approaches is post-normal science, which has been advanced as a framework for dealing with complex problems where uncertainties and decision stakes are high—post-normal science "entails moving to a science based on unpredictability, incomplete control, and a plurality of legitimate perspectives" (Funtowicz & Ravetz, 1994, p. 1881). As Stirling (2010) writes, when dealing with unmeasurable uncertainties it is important to "keep it complex", accepting and documenting diverging perspectives instead of reducing these uncertainties into a single, calculable risk. Complexity oriented approaches to scientific reasoning offer directions for future research that are not explored in detail here, but are pointed to in the Conclusion section.

Academies of Sciences, Engineering, and Medicine (2016) recently released an extensive report titled "Genetically Engineered Crops: Experiences and Prospects", which includes statements regarding the lack of proof that GM foods are less safe than other foods made from non-GM ingredients. Each side of this scientific division is emphasized and mobilized in an effort to win public approval. For example, large-scale corporations and supportive governments mobilize particular discourses that depict GMOs as beneficial and safe, consistently pointing to a lack of scientific proof that GMOs are unsafe, and emphasizing the similarities of genetic modification with conventional plant breeding. Conversely, anti-biotech groups often emphasize the opposite, pointing to the remaining uncertainty regarding GMO safety, and the unique risks they pose. As these debates continue in scientific, political, and social domains, there remains a need to better understand the impacts of discourse and their associated relations of power.

Power and language in GMO debates is an important area of research, particularly with regard to the ways in which discourse is both produced and wielded in battles over public opinion. In this chapter, the discursive domain of agri-biotech debates is explored in an effort to illustrate the connections between normatively and historically embedded discourses, and the power effects that may undulate from their deployment. In their analysis of Monsanto's efforts to shape public opinion and political debate over biotechnology, Kleinman and Kloppenburg (1991) outline how "discursive elements with historical resonance" are drawn from to create a positive image of biotechnology—two prime examples being technological determinism and scientific expertise[26] (p. 427). According to Kleinman and Kloppenburg (1991), these historically

[26] Technological determinism, or technological progressivism, is the view that "technology has a logic of its own that directs it along a single inevitable trajectory"; such ideas can be dated back to the Enlightenment and the de-legitimation of the Luddites in the 19th century (Kleinman & Kinchy, 2003; Kleinman & Kloppenburg, 1991, p.

embedded ideas benefit Monsanto's efforts to create "an image of biotechnology as developing inevitably along a particular trajectory, as immanently and universally beneficial, and as a realm appropriately assessed only by experts" (p. 431). These authors illustrate the potential impacts of historically and normatively embedded understandings of what counts as 'truth', and who can produce it.

Pro-poor narratives which position GM foods and crops as the solution to world hunger are prevalent in agri-biotech discourse, and represent a key example wherein language use in GMO debates is embedded in the power of framing (see Chopra, 2015; Glover, 2009; 2010; Kleinman & Kloppenburg, 1991). Glover (2010) highlights the ways in which perceptions regarding agricultural biotechnology have been shaped by the narrative of expectations about GMOs holding critical future benefits for global hunger and poverty. Ideological commitments to double food production for a growing population work to marginalize issues like global diet and lifestyle trends (Tomlinson, 2011). According to Tomlinson (2011, p. 81) "the imperative to double global food production by 2050" is now ubiquitous when discussing international food security policy[27], but the key is whether or not this imperative is used as a normative goal or a projected (and not necessarily desirable) future. If the prediction that we will need to double food production is transformed into a normative imperative, wherein we commit to finding a way to actually double food production to satisfy population growth, we may fail to explore other options regarding access, distribution, and waste for instance. A reason for this transformation, Tomlinson (2011) suggests, may be that the goal of doubling global food production aligns well

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432). Scientism is the idea that facts, being superior and more credible, must be kept distinct from values—a distinction that has roots as far back as Plato and the creation of science as a profession (Kleinman & Kinchy, 2003).

[27] The Millennium Development Goals (particularly Goal 1) and the Post-2015 Development Agenda are important sites for this discussion of international food security policy.

with ideological commitments to economic growth, liberalized trade, and technological and scientific problem solving. Glover's (2009) research explains how hidden assumptions that have shaped the pro-poor narrative of agricultural biotechnology "have involved the radical simplification of the complex agronomic and livelihood contexts into which GM crops have been inserted". This process of simplification helps to illustrate the connections between power and discourse—the ways in which technological assessments can be translated into political commitments. Sharratt (2001a) contributes to this argument, stating:

> Genetic engineering is sold as the solution to world hunger and increasing environmental degradation in an attempt to justify and legitimate genetic engineering as a technological fix for problems that are largely social, political, and economic rather than technical. (p. 8)

According to Glover (2009), several studies have identified the technological and economic success of GM crops in developing countries, which may help explain why links to the developing world and feeding a growing population are so prevalent. Further research is needed on exposing the assumptions which shape narratives such as this. As Sage (2013) suggests, research should be "more concerned with revealing the interconnections between a hegemonic agri-food system, the degradation of environmental support systems and stressed human metabolic states" (p. 23). A pre-occupation with technological and scientific solutions to global problems may restrict our vision, shadowing more efficacious alternatives such as re-peasantization[28]. Efforts to influence public perceptions and policy debates regarding agricultural biotechnology are imbued with complex power relations involving discursive battles over the production of 'truth'.

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[28] Re-peasantization, or the restoration of varying forms of peasant agriculture, has been promoted to counter "the threat presented to world food security by the third crisis and by food empires" (van der Ploeg, 2007, p. 332).

'Truth'—or more precisely, the power and politics of truth—represents an important site for analysis regarding agri-biotech discourse. In Foucault's (1984) view, in each society there is a general politics or regime of truth, which refers to

> the types of discourse which it accepts and makes function as true; the mechanisms and instances which enable one to distinguish true and false statements, the means by which each is sanctioned; the techniques and procedures accorded value in the acquisition of truth; the status of those who are charged with saying what counts as true. (p. 73)

Scientific discourse, including the actors and institutions that produce it, plays a key role in our current truth regime. Wynne's (2001) critique of contemporary policy culture of GMOs illustrates this role, particularly "the ways in which science has become the culture of policy rather than its key intellectual resource" (p. 472). Dominant constructions of GMO discourse position scientific knowledge as objective and unquestioned, while public discourses are ungrounded and emotionally based—as such, public perceptions are represented as opinions without any intellectual weight, while the scientific knowledge culture remains unreflexive of its own value commitments (Wynne, 2001). Dominant constructions of GMO discourse have been found to take place at the university level, illustrating the learned and embedded practice of defending scientific claims by positioning public opposition as lacking sufficient knowledge (Solli, Bach, & Åkerman, 2014). This study is interested in such constructions as important sites of power relations. When scientific discourses are privileged over other forms of knowledge and mobilized to counter public opposition, science moves from an intellectual resource (to use Wynne's phrase) to a political tool. GMO debates include long-standing discursive battles over how to view and understand agricultural biotechnology; this fight over the 'truth' about GMOs deserves critical attention.

GMO debates in Canada

The Canadian government's dual role as regulator and promoter of agricultural biotechnology has been criticized for its biased, uncritical approach to GMO regulation (Abergel & Barrett, 2002; Andrée, 2002; Magnan, 2006). A narrow risk focus and prioritization of technological innovation and economic competitiveness has impacted the extent to which the Canadian state has engaged the public in the development of agri-biotech policies (Abergel & Barrett, 2002). According to Magnan (2006), not only does Canada's supportive position on biotechnology limit its capacity to respond to public concerns, we can also expect future public relations efforts to vie for support for these technologies.

Although the approval for growing GM crops in Canada has been occurring since the 1990s (i.e. corn, soybean, canola, and sugar beet), anti-biotech campaigns have also been successful on numerous occasions over this time period. For example, in 1994, opposition from several different Canadian organizations was successful in blocking the use of recombinant bovine growth hormone (rBGH) in Canada[29] (Sharratt, 2001b). Also, Eaton (2009; 2011; 2013) has thoroughly cataloged a similar coalition that successfully opposed the introduction of GM wheat in Canada in the early 2000s. These victories, however, are arguably a trade-off for a more general stalemate in Canadian biotech policy. The instances when GM crops/products have been successfully opposed in Canada represent specific "wins" in the anti-biotech campaign, but have not materialized into an effective transformation of Canada's use and development of GM technology in general. This article contributes to such scholarly discussions of how anti-biotech

[29] For a detailed examination of the rBGH controversy in the U.S., including a discussion of shifting patterns of discourse and the consumption politics of food, see Buttel (2000).

campaigns have been successful on specific occasions, yet relatively unsuccessful in achieving more general, systemic changes. It examines discursive battles in the Canadian agri-biotech arena and identifies varied instances of power imbalance in order to expose important biases and predispositions with regard to public opinion on GM foods and crops.

FOUR DIMENSIONS OF POWER IN GMO DEBATES

Exploring the impacts of power relations within debates over agricultural biotechnology requires an understanding of the diversity and complexity of these relations. As a theoretical concept, power has been defined and categorized with considerable depth and breadth (see Clegg & Haugaard, 2009; Dean, 2012; 2013; Digeser, 1992; Foucault, 1980; Haugaard, 2002; 2012; Lukes, 1974; 1986). A fusion of many works and ideas affords this study the theoretical strength to thoroughly analyze power relations within agri-biotech discourse in Canada. This study approaches power as (1) a capacity that is possessed and deployed, by actors such as corporations for example (see Fuchs, 2007; Clapp & Fuchs, 2009), and (2) as a constitutive, underlying force that establishes and influences other forms of power (see Digeser, 1992; Rye, 2014). These two approaches to power are interrelated, and in many ways reinforce one another.

Approaching power as a capacity that is possessed and deployed, Fuchs (2007) and Clapp and Fuchs (2009), describe three forms of power: *instrumental*, *structural*, and *discursive*. *Instrumental* power involves the direct influence of one actor on another. Clapp and Fuchs (2009) usefully conceptualize instrumental power to examine impacts of agri-food corporations on global food systems, for instance, corporate lobbyists have the capacity to influence policy formation. Dahl's (1957) early conception of this form of power focuses on the capacity actors

have to influence actions/events through their own actions. Bachrach and Baratz (1962, p. 948) extend Dahl's power concept to include a second "face" of power which investigates the "mobilization of bias"; actors exert power by "creating or reinforcing social and political values and institutional practices that limit the scope of the political process". This form of power is referred to by Clapp and Fuchs (2009) as *structural* power, an example being agri-food corporations articulating disincentives such as the consequences of lost jobs or added costs to farmers and consumers if too many restrictions and regulations are placed on the industry. These two categories (or "faces") of power represent important, more explicit, instances of influence and control.

Lukes (1974; 1986) offers a third dimension of power wherein subjects act voluntarily due to modifications in their own values and beliefs. This understanding of power shares similarities with Castells (2013) work on communication power, as well as Gramsci's (1971) discussions of consensus and common sense, however the focus here is the application of Lukes' work to the concept of *discursive* power (see Fuchs, 2007; Clapp & Fuchs, 2009; Fuchs *et al*., 2015). Clapp and Fuchs (2009) describe this form of power as preceding decision-making, involving the framing of issues around certain norms and values. This form of power acknowledges the role of media and other public relations mechanisms in framing political issues. The discursive strategy of framing agri-biotech issues is an essential focus of this study; of particular interest is how the strength of certain frames being deployed are (at least in part) constitutive of widespread, long-standing normative assumptions.

Dean (2010, 2012) and Digeser (1992) outline a fourth dimension of power founded upon the works of Foucault (see 1977, 1980)—this fourth dimension is referred to here as

constitutive[30] power. In this study, power is approached in four dimensions to add to the understanding of pro-biotech and anti-biotech battles for public attention. All four types of power interlace in varying combinations depending on the social context. This application of power offers insights into how distinct and interconnected forms of power can be identified, and how certain topics, opinions, and values toward agricultural biotechnology are enabled or constrained. Constitutive power provides a critical divergence from the first three dimensions of power—particularly on the point of agency. Digeser (1992) and Dean (2010, 2012) offer a clear explanation of this conception of power, utilizing the work of Foucault. Constitutive power is not possessed but rather forms the space for exercising power through the historical development of norms and discourses in which actors participate and interact; it comprises the background conditions that form subjects and enable/ disable the capacity for agency (Digeser, 1992). Dean (2010, p. 461) explains that it is useful to look beyond "the identification of agents of power" and to "attempt to understand the kind of power relations in which such forms of agency appear". In this sense, there is a form of power that exists outside of the actions of agents operating towards their own ends; for Dean (2012), the first three faces of power imply a "zero-

[30] Peter Digeser (1992) provides a strong explanation of this form of power and refers to it as the fourth face of power, or "power$_4$". In order to align the terminology for this type of power with the more descriptive terms used by Clapp and Fuchs (2009) for the first three forms, I have chosen the term *constitutive* power, which is consistent with the language (which draws heavily from Foucault) used to describe this form of power (See Foucault, 1977; 1980; Haugaard, 2002). The term constitutive also reflects what Barnett and Duvall (2005) refer to as "social relations of constitution", which involves a like-minded application of the fourth dimension of power. Previous uses of the term 'constitutive power' are inconsistent. While some authors position constitutive power as possessed and deployed by actors, such as the state (see Avelino & Rotmans, 2009; 2011; Browning & Christou, 2010; Neocleous, 1996), others view constitutive power as embedded in socially and historically developed norms and discourses (see Davies, 2002; Jennings, 2011; Kiersey, 2008; Read, 1999; Ryan, 2014; Rye, 2014; Trowler, 2001). The present study adopts the latter view.

sum" concept that focuses on power as a possession—the action of powerful actors subtracts power from others.

An example of constitutive power is the influence of scientific discourse in agri-biotech debates. That is, the dominant discourses of scientific reasoning are suitably conceptualized in this dimension of power in order to examine their influences on decision making, and the production of knowledge in general. It should be asked, as Foucault (2003) has:

> What types of knowledge are you trying to disqualify when you say that you are a science? What speaking subject, what discursive subject, what subject of experience and knowledge are you trying to minorize when you begin to say: 'I speak this discourse, I am speaking a scientific discourse, and I am a scientist.' (p. 10)

Andrée (2005) explains that scientific discourse deploys its own form of influence by placing limitations on what makes sense. Actors without scientific-technical knowledge are limited in their capacity to influence policy, regardless of their level of interest in the policy outcome (Andrée, 2005). In this sense, scientific discourses (as a dominant norm) enable and constrain the capacity for agency—the capacity to possess and exercise certain forms of power. Such views are an essential expansion to the study of power relationships within language use regarding agricultural biotechnology. Certain forms of knowledge are embedded in historical and normative understandings of truth which are mobilized by actors vying to win public support.

Utilizing the above framework, this article outlines how—based on a combination of varying power relations—some discursive[31] strategies are more powerful than others. Instrumental and structural power relations (such as the supportive actions of the Canadian state)

[31] To be clear, this article applies a four dimensional power framework to an analysis of discourse. One of the dimensions of power that is being looked at is *discursive* power, which involves the use of conversation, text, etc. (i.e. discourse) to influence/persuade other actors. However, all four dimensions of power discussed are utilized in this article to explore the varying relations of power embedded in pro- and anti-biotech discourse.

establish a favourable climate for pro-biotech discourse. Further, discursive strategies such as pro-biotech frames are deployed to influence opinion; such strategies are advantaged by constitutive power relations, including historically embedded normative assumptions. I propose a fuller engagement with the breadth of power relations is necessary to help make room for a more open-ended inclusion of public opinion, and allow anti-biotech campaigning to focus on more incisive and systemic critiques.

DATA AND METHODS

A total of 36 individual documents were compiled from pro-biotech publicity materials and anti-biotech campaign materials. The unit of analysis was limited to materials directed at the Canadian public by the CBI and CBAN who are mandated to disseminate information about agricultural biotechnology. Materials published by these two organizations from 2010 to 2015 were selected to provide an up-to-date representation of language and problem framing in pro- and anti-biotech sources on GMO debates in Canada. All materials were collected via relevance sampling; using key words and targeting two specific organizations (the CBI and CBAN) allowed for a systematic isolation of relevant materials (Krippendorff, 2012). Sampling was performed on web search engines (e.g. Google) and the respective websites of the CBI and CBAN. Web materials, including advertisements, pamphlets, flyers, booklets, web pages, and other downloadable documents were compiled. Audio/video materials were not included. The documents were coded and analyzed in an iterative process utilizing insights from sociological discourse analysis (see Ruiz Ruiz, 2009) and critical discourse analysis (see Jäger, 2001; Fairclough, 2001; 2013).

The methods used in this study involve a combination of textual analysis, contextual analysis, and reflexive interpretation. First, textual analysis involves looking at the wording, metaphors, and other grammatical elements of a text (Jørgensen & Phillips, 2002). Second, contextual analysis involves outlining the context of the material being analyzed; including considerations of authorship, audience, and dissemination. Third, reflexive interpretation "involves making connections between the discourses analyzed and the social space in which they have emerged" (Ruiz Ruiz, 2009, p. 25). Here, the social, cultural and historical context of a particular discourse is reviewed. This phase takes place throughout textual and contextual analysis. For Ruiz Ruiz (2009, p. 25), "analysis is conducted in a constant and bidirectional manner among these three levels". Results from the analysis are outlined below.

CANADA'S STANCE: PRO-BIOTECH BOON AND ANTI-BIOTECH BATTLE

It is well established that the Canadian state plays a dual, contradictory role as both regulator and promoter of biotechnology (Magnan, 2006; Prudham & Morris, 2006). This dual role contributes to the production of discourses by both industry and the Canadian state which appear mutually supportive, including the use of complementary (and sometimes identical) language in descriptions of Canada's approach to regulating agricultural biotechnology. Furthermore, this stance by the Canadian state works to stifle approaches to more open and transparent policy development. As Magnan (2006) explains, "given the state's role in regulating and actively promoting the technology, government-sponsored public consultations have taken on the aura of public relations and have risked foreclosing meaningful opportunities for debate" (p. 25).

According to Kneen and Kuyek (2002), successive Canadian governments have supported the biotech industry since 1980. The supportive stance of the Canadian government is depicted in their deployment of instrumental and structural power to advance the development of the agri-biotech sector. Federal policies like the National Biotechnology Strategy (1983) and the Canadian Biotechnology Strategy (1998) are strong representations of instrumental power as they are explicitly designed to foster development and innovation in the sector. These policies helped create a favourable climate for GMOs and established agricultural biotechnology as an economic, technological, and scientific priority in Canada. An important aspect of the Canadian Biotechnology Strategy was the creation of the Canadian Biotechnology Advisory Committee (CBAC), which Health Canada (2005) describes as "an arms-length committee consisting of multidisciplinary experts and members of the general public". CBAC's activities regarding the regulation of GM food in Canada offer a clear example of structural power; critics have described the nomination procedures for the members of CBAC as biased against experts critical of biotechnology (Magnan, 2006), and the stakeholder consultations held in 1998 and 2001 as undemocratic, because they were private, by-invitation meetings (Barrett, 2002). As Gerlach, Hamilton, Sullivan, and Walton (2011) describe it:

> the format, structure and nature of the process results in participation by direct stakeholders and excludes the population at large. As a result, conclusions and recommendations are predetermined and robust exchange over ethical and social concerns is neatly avoided (p.117-8).

The Canadian government effectively mobilized their bias towards the development of biotechnology through CBAC's public consultations.

Canada's regulation of agricultural biotechnology has also been criticized for its case-by-case, product-based approach. Each novel agricultural product is assessed and regulated based on

its novelty, not on the processes of production (CFIA, 2007). This system regulates several different product development technologies[32] within the same legislative framework, focusing on the characteristics of each individual product. Instead of viewing GM products as being developed from a distinct process needing unique regulatory mechanisms (e.g. GMO laws), GM products are grouped with other "novel agricultural products" and regulated within a system already set in place (Tait & Levidow, 1992). One particularly contested aspect of these product-based regulations is the concept of 'substantial equivalence'. The essential idea is that GM crops deemed compositionally similar to crops already approved and on the market, may be exempt from certain safety assessments and other requirements because their risk is deemed comparable to an already approved crop (see Clark, 2004; RSC, 2001; Prudham & Morris, 2006)[33]. Substantial equivalence, and other aspects of Canada's GMO regulatory system, such as the efficacy of tests for toxins and allergens (see Clark, 2004) and a purely voluntary labelling standard for GM foods, provide grounds for critiques that this system is weighted in favour of industry development and away from a precautionary logic (see Prudham & Morris, 2006). This regulatory framework is an important component of the overall positive stance to biotechnology taken by the Canadian state. Of particular interest to this study is how the Canadian state's wielding of instrumental and structural power might shore up pro-biotech publicity discourse. Analysis reveals that the Canadian state's supportive stance on agricultural biotechnology,

[32] In addition to genetic modification, the types of technologies used to develop other PNTs include: chemical mutagenesis of plant seeds, like sunflowers; high pressure processing for egg salads, dips, and spreads; and adding phytosterols to juices and yogurts (Health Canada, 2015).

[33] For further details see CFIA Directive 94-08 (Dir 94-08) Assessment Criteria for Determining Environmental Safety of Plants With Novel Traits (2016), http://www.inspection.gc.ca/plants/plants-with-novel-traits/applicants/directive-94-08/eng/1304475469806/1304475550733

including the establishment of product-focused regulations, acts as a boon to pro-biotech publicity materials and a limitation for anti-biotech campaign materials.

Canada's positive stance is a boon to pro-biotech discourse

One of the more overt findings from the analysis is that the Canadian state's overall supportive stance toward agricultural biotechnology is utilized within pro-biotech publicity discourse. That is, pro-biotech public relations materials include endorsements of the Canadian government's regulatory system, just as the language used by Canadian governmental organizations is complementary to industry practices. The Canadian state and the agri-biotech industry provide a mutual boon to one another in their descriptions of the industry and its processes of governance and scientific assessment. The CBI's (2011d) four-page factsheet "Understanding Canadian Biotech Regulations" includes several excerpts which illustrate how Canada's positive stance toward biotechnology is integrated into pro-biotech publicity materials. One of the opening paragraphs reads:

> The Canadian plant biotechnology industry is regulated by our federal government. Our stringent regulatory system, with its checks and balances, ensures that all products of biotechnology are safe for people, animals, plants and our environment before they are made available to the consumer. This includes an extensive safety review by both the Canadian Food Inspection Agency (CFIA) and Health Canada. (CBI, 2011d, p.1)

These statements capture the CBI's efforts to intertwine industry actors with Canada's regulatory system and government organizations. By emphasizing adjectives like 'stringent' and 'extensive', the CBI points to their overall agreement with, and adherence to, the current Canadian system of agri-biotech regulation. Also, the use of the possessive adjective 'our' is a

subtle but important textual attribute which couples industry and government actors. By referring to "our current regulatory system" the CBI is able to clearly assert their support for stringent regulations that are designed to ensure the safety of their products. Another excerpt that integrates the actions and commitments of government and industry, states:

> Beyond government regulations, the plant science industry develops training and educational materials such as the CropLife Canada Compliance Management for Confined Field Trials Program which has trained over 300 Canadian researchers on how to properly conduct research trials. (CBI, 2011d, p. 4)

Here, the CBI outlines how pro-biotech trade associations like CropLife take part in training and education activities that act as a complement to government regulations. In addition to the coupling of industry and state responsibilities, this document explains how Canada's regulatory system is in line with the international community:

> Canada's regulatory guidelines are based on scientific principles and were developed in conjunction with experts in the global scientific community including the United Nation's Food and Agriculture Organization (FAO) and the World Health Organization (WHO). (CBI, 2011d, p.1)

The CBI references Canada's commitments to scientific principles, experts, and the international community to defend Canada's regulatory system, and by extension, defend the level of assessment their products receive. This quote points to the global scale of agri-biotech discourse, and the role of international organizations. The Food and Agricultural Organization of the United Nations (FAO) has a history of involvement in researching the importance of agricultural biotechnology (Phillips & Ilcan, 2007), and is shown pushing for expert and scientific knowledges in the governance of agriculture on a global scale (Ilcan & Phillips, 2003; Phillips & Ilcan, 2007). Claiming Canada's science-based regulations are consistent with "experts in the global scientific community" offers a wider network of supportive stances to substantiate

industry practices. The CBI is defending the agri-biotech industry in Canada by arguing that the FAO and WHO influenced the development of Canadian regulations. In this sense, the CBI is projecting the biotech industry as a positive contribution to agriculture, operating in a system supported by Canadian and international decision makers. Overall, instrumental and structural power relations, such as support for the agri-biotech industry by the Canadian state and international organizations, appear to shore up pro-biotech publicity discourse.

Canada's positive stance impacts anti-biotech campaigns

The strong commitment to biotechnology by the Canadian state, including its product-focused regulatory structure, appears to impact anti-biotech campaigns in two ways: (1) anti-biotech discourse includes criticisms of certain government decisions and actions in response to the non-neutral position of the Canadian state, and (2) Canada's product-focused regulatory structure works to prefigure CBAN's attention to campaigns targeting specific GM products. In effect, Canada's positive stance toward GMOs helps to pre-determine the direction of anti-biotech campaigns toward particular criticisms and away from others.

Although it may be unsurprising (if not expected) that CBAN's campaign materials include criticisms of government decisions/regulations, it is useful to include a couple of examples of this language use to illustrate how CBAN's positionality toward the Canadian government gets reflected in discourse. Two different brochures against the introduction of GM salmon include the following statements:

> We call upon the Federal government to stop any current safety assessments of GE fish until the completion of a full, transparent, open and accessible public consultation on the social, ecological, human health, and market implications of introducing GE fish has

> been completed and its findings have been debated in Parliament. (CBAN, 2011)
>
> In late 2013, Environment Canada announced its decision to allow production of the GM fish and fish eggs in Canada. This is the first government approval for this GM fish anywhere in the world. (CBAN, 2014)

These statements target the Canadian government's avoidance of "open and accessible public consultations", and highlight Canada's supportive stance toward GMOs, specifically GM fish. The contrast between CBAN's statements, and the CBI's depiction of industry and government as allies, illustrates the imbalanced standing of these opposing organizations, and its impact on their associated discursive strategies. The CBI is able to capitalize on the non-neutral position of the Canadian state while CBAN wages criticisms against both.

Of the materials analyzed from CBAN, an overwhelming majority focus explicitly on resisting the development of specific GM products. Agri-biotech regulations are product-based in Canada, meaning that regulation is based on a product's novelty, "not on how they were produced" (CFIA, 2007, p. 13). Recent campaigns (2013-2014) have specifically focused on GM alfalfa, apples, fish, sweet corn, among others (CBAN, 2014g), illustrated in statements such as:

> Contamination from GM apples threatens the future of our apples, and the farmers who grow them (CBAN, 2012).
> PROTECT FAMILY FARMS. STOP THE RELEASE OF GM ALFALFA! (CBAN, 2013)

As mentioned, targeted campaigns have achieved considerable success in Canada; rBGH in 1994 (Sharratt, 2001b), Roundup Ready wheat in 2004 (Eaton, 2009), and GM alfalfa in 2013-14[34] (CBAN 2013d, 2014f). These victories should be considered important successes, especially due

[34] GM alfalfa has recently been released in Eastern Canada, and campaigns continue to prevent contamination and further release.

to the prominence of these products in Canada[35]. The potential drawback from targeted campaigns is whether the specificity of anti-biotech campaign materials will inadvertently validate the overall biotech system. As Jasanoff (2005) explains, "deeper theoretical perspectives on what is at stake in the politics of biotechnology – more specifically, what is new and debatable about the politics of engineering life – tend to get lost in the noise about the individual application" (p. 185). While anti-biotech campaigns usefully target each GM product that is developed in, and assessed by, Canada's regulatory system, the more general critiques of agricultural biotechnology advanced by CBAN are largely buried within these targeted, product-focused materials. Campaign discourses vying for an alternative regulatory system and explicit recognition of the potential long term, systemic impacts of GMOs, such as the increased privatization and commodification of plant breeding, are not well covered in the focused campaigns against, for example, GM sweet corn, salmon, alfalfa, and apples.

The point being made here is that CBAN includes, within the anti-biotech materials, important critiques of the more general and cumulative negative impacts of GMOs and the need for a broader approach to regulation, but is consistently vocalizing these concerns within the context of product-focused campaigns. Within their campaign materials opposing Monsanto's 'SmartStax' GM corn which 'stacks' together multiple traits in a single GM product, CBAN critiques Health Canada for waiving the need for safety assessment (because the product combines only traits that have been previously assessed); highlights the ways SmartStax technology contributes to Monsanto's increasing control over the seed market; and also

[35] For example, spring wheat, which would have been replaced by Roundup Ready wheat, is Canada's largest crop in terms of total production tonnage, reaching an estimated 20 million tonnes of production in 2014, and is the second largest crop in terms of area seeded, at 7 Million hectares (Statistics Canada, 2014).

advocates for a moratorium on new crop/food approvals and "a comprehensive reform of the entire regulatory system in Canada" (CBAN, 2009; 2010a). Furthermore, CBAN (2011) expresses their support for a broader regulatory framework within the campaign flyer against GM salmon, stating:

> We call upon the Federal government to stop any current safety assessments of GE fish until the completion of a full, transparent, open and accessible public consultation on the social, ecological, human health, and market implications of introducing GE fish has been completed and its findings have been debated in Parliament.

Canada's product-based regulatory system embeds anti-biotech campaigns, like CBAN's, within the same system, resulting in product-based campaigns. Key positions against the systemic impacts of GMOs and the need for a broader alternative regulatory framework are buried within the individualized campaigns. This relationship points to the complex power relations that impact anti-GM discourses. Instrumental and structural power relations between the Canadian government, the agri-biotech industry, and its critics have produced a climate which is conducive to pro-biotech publicity and constraining to anti-biotech campaigns. In the next section, I discuss how this imbalanced state is bolstered by pro-biotech organizations framing GMOs as a solution to complex global problems, and how anti-biotech strategies are further constrained in this arena—the concepts of discursive and constitutive power inform this analysis.

FRAMING BIOTECHNOLOGY:

ANOTHER PRO-BIOTECH BOON AND ANTI-BIOTECH BATTLE

Discursive power is about the potency of the frames actors use to couch their preferences, which are deployed as a strategy to influence policy (Sell, 2009). Corporate actors, according to Clapp

and Fuchs (2009), often play a role in framing certain problems in public discourse, which can indirectly influence the options being considered to address them. Analysis of frames/framing dates back (at least) to Goffman's (1974) work, and plays an important role here in the examination of pro- and anti-biotech publicity/campaign materials. As Entman (1993) explains, "the frame determines whether most people notice and how they understand and remember a problem, as well as how they evaluate and choose to act upon it" (p. 54). Of concern here is how agricultural biotechnology is being framed in pro-biotech publicity materials, as well as how problems (such as food insecurity) are assigned into categories by associating them with particular norms and values (see Hajer, 1997; Kooiman, 2002 as cited by Clapp & Fuchs, 2009). Global problems such as world hunger and environmental degradation are defined by pro-biotech actors as problems of efficiency and production capacity, solvable through technological innovation and scientific expertise (see Borlaug, 2004). Advancing these problem definitions can be viewed as an exercise of discursive power by those who promote these frames.

It is also useful to consider the conditions that contribute to the potency of these frames, including the historically and culturally developed norms and values embedded in framing practices of corporate actors. Viewed as a form of constitutive power, these conditions set the stage for framing by privileging particular forms of knowledge, and particular means for producing 'truth'. Normative assumptions developed over time through historical and cultural interactions comprise the background conditions for agency, outlining which actions and ideas are rational, logical, and defensible (see Andrée, 2005; Digeser, 1992; Moore, Kleinman, Hess, & Frickel, 2011). In this study, technological progressivism and scientism are two powerful forces that enable the capacity/agency to frame certain problems as solvable through agricultural biotechnology. In the sections below, I set forth two arguments: (1) the potency of pro-biotech

frames are constituted and sustained by long-standing values and norms, and (2) anti-biotech campaign materials appear preoccupied with dissolving these frames.

Framing GMOs: Technological progressivism and scientism

According to Entman (1993), framing is about selecting particular aspects of a "perceived reality" and making them stand out in order to promote a particular view of a problem (p. 52). The CBI's publicity materials frame agricultural biotechnology as a solution to global problems, particularly regarding food security and the environment. A factsheet by the CBI (2011f, p. 1) entitled "Protecting Our Planet" states:

> Modern plant biotechnology products help our farmers produce a safe, healthy and abundant food supply, while reducing agriculture's environmental footprint. This technology allows farmers to produce more food on the same amount of land, reducing the need to expand land for crop production.

Biotechnology is also positioned as a solution to drought in Africa:

> Sharing technology around the world – Canadian biotech company, Performance Plants Inc has signed an agreement to share its drought-fighting seed technology with Africa Harvest Biotech Foundation International (CBI, 2011c, p. 4).

The above quote is from a booklet called *Biotech Basics* which outlines the importance of growing more food per acre under subheadings like "Feeding a hungry world" and "Doubling food production for the planet by 2030" (CBI, 2011c, p. 6–7). Overall, these pro-biotech publicity materials illustrate the CBI's discursive efforts to articulate how agricultural biotechnology can help feed a starving and growing population, all while "helping improve the health of the Earth and the people who call it home" (CBI, 2010).

What makes assertions about feeding a hungry world with GMOs problematic is the political-economic value embedded in making this assertion, and the ways in which this limited approach to solving global poverty and hunger focuses on a small set of technologies instead of the agricultural knowledge of farmers (Chopra, 2015). Furthermore, such narrow approaches downplay the risks and potential disadvantages associated with pursuing these technological solutions (Glover, 2010). Kleinman and Kinchy's (2003) discussion of *technological progressivism* illustrates the impacts of depending on (bio)technical solutions, and the danger of understanding technological progress as an end instead of a means. Associated discourses are used to influence public opinion regarding the necessity of agricultural biotechnology, and takes advantage of the constitutive power of historically formed normative assumptions about the value and importance of technological progress. The assumption that progress is an essential part of modernity dates back to the Enlightenment (Kleinman & Kinchy, 2003; Kneen, 2013). This is a common theme among the pro-biotech materials analyzed, and has been identified before. In outlining technological determinism as a discursive element in Monsanto's promotional campaign, Kleinman and Kloppenburg (1991) argue "this view implies that technology has a logic of its own that directs it along a single inevitable trajectory" (p. 432). With regards to CBI's fact sheet "Protecting Our Planet", the coupling of technological improvement with the environment is important because it positions environmental sustainability as achievable through technical means, supporting the *single inevitable trajectory* of bio-technical environmental solutions. The issue here is the promotion of technological progress, specifically in the area of biotechnology, to combat global social problems like climate change and food insecurity. These

complex problems are narrowly defined by technical solutions[36], marginalizing non-technical solutions that are not tied to political-economic interests.

In addition to themes reflecting technological progressivism, the CBI also actively invokes frames that seek to strengthen and legitimize their position on agricultural biotechnology by aligning it with trusted, authoritative sources. In a recipe book by the CBI (2011h) entitled "Good Ideas are Growing", nutritionists and registered dieticians are quoted in support of the consumption of canola, corn, legumes, soybeans, and wheat—most of which are available as GMOs. Adherence to expert opinion points to the strategy of downplaying dissenting opinions by maintaining the divide between public perceptions of GM crops, and the allegedly objective opinions of "experts" (Stirling, 2012). Importantly, some of the CBI's most pervasive references to experts and procedures that legitimize agricultural biotechnology had to do with the adherence to scientific principles[37]. Statements wherein science is given implicit importance and credibility include:

> Through plant science innovations, including biotechnology, Canadian farmers are ensuring high productivity rates and increased food quality (CBI, 2011e).

Furthermore, the mandate listed on most of the CBI's publicity materials includes the phrase:

> The Council for Biotechnology Information is a non-profit association whose mandate is to communicate science-based

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[36] Problem solving through technological progressivism can also have unintended consequences—the Green Revolution provides a fitting example, significant production increases were achieved alongside "unintended environmental, social, and institutional consequences" (Pingali, 2012, p. 12302).

[37] CBI's (2010) children's activity booklet "Look closer at biotechnology" was analyzed for numerical indications of word repetition—directed toward children, this booklet offers a brief (2,583 words), clear, and simple discussion of biotechnology. Interestingly, the word "scientist(s)" appeared 25 times, making it the third most common word in the document (discounting grammatically necessary words such as prepositions and articles). The word occurring most frequently was "biotechnology" (64 times), and the second most common was "grow" (26 times).

> information about the benefits and safety of agricultural and food biotechnology (see CBI, 2011f, p. 4).

These statements position science-based information as authoritative, necessary, and unquestioned. Andrée (2005), drawing from Foucault, explains how scientific discourse exhibits a normalizing power in politics, marginalizing actors without the requisite expertise and limiting avenues of resistance. The CBI uses the concept of "science-based information" to validate their position. Implicitly, such statements work to disqualify and 'minorize' forms of knowledge that are not defined as science-based (see Foucault, 2003). By using scientific knowledge as a defence for GM technology, the CBI is essentially placing science-based information above other sources, such as social and ethical considerations. This use of 'science' as a defence for agricultural biotechnology is a persistent theme in pro-biotech publicity materials.

To be clear, it is not the discipline of science that needs critiquing here, nor should these arguments be viewed as an opposition to science, and scientific reasoning. Of particular concern here is the use (or misuse) of 'science', or more accurately, conventional scientific discourse, for a particular purpose. As Wickson and Wynne (2012) point out, when science is used for policy development in contested areas like GMOs, it can be used to close down policy debate to a limited number of experts instead of providing a range of options to democratically accountable policy makers. This is a key problem regarding the regulation and governance of GMOs, as scientific assessments are an invaluable aspect in decision-making on the technologies, but scientific discourse can be mobilized to overshadow other forms of knowledge. As Bronson (2014) illustrates, the courtroom dialogue in *Schmeiser v. Monsanto* clearly privileged scientific expertise as more credible source of knowledge.

Of particular interest to this study is what constitutes the "internal regime of power" of scientific statements; what forces (social, economic, cultural, etc.) are behind the production of

'truth' (see Foucault, 1984). More to the point, Stirling (2012) explains that "if one believes that science discovers facts and that facts determine technology, then there is little latitude for meaningful social engagement on the direction of technology change" (p. 3). As such, strategies that privilege scientific knowledge for the purpose of marginalizing other perspectives need to be identified. As Irwin and Wynne (1996) point out, "what counts as 'science' may be shaped by social relations and institutional structures so that the very constitution of science will reflect wider social interests". Notions of 'scientific expertise' and 'science-based information' are understood here as the products of constitutive power; these embedded normative assumptions produce accepted 'truths' that actors like the CBI can draw on to shore up their discursive power.

The notion of "scientism" is used here to capture this strategy of mobilizing scientific discourse; according to Kleinman and Kinchy (2003) "scientism is the notion that values should not be allowed to mix with facts, and, further, should not be considered in decisions about science and technology" (p. 379). Within the materials analyzed for this article, terms such as "scientific" and "science-based" are used by different actors to validate arguments, and depend on pre-conceived understandings of what makes information reliable. Deploying discursive power through strategies which call upon the defense of "science" is fortified by constitutive power; scientific discourse occupies a privileged position in the production of 'truth', making claims regarding the science-based regulation of GMOs for example, more salient. The CBI's efforts to align their business interests with a level of *scientificity* do not demonstrate a dedication to rigorous, verifiable procedures—these efforts represent an "aim to inscribe knowledges in the hierarchical order of power associated with science" (see Foucault, 1980, p. 85). This use of science, or more accurately the normative weight of science, results in the displacement and/or demotion of other forms of knowledge in contexts such as policy making.

As Irwin and Wynne (1996) explain, "to accept science as a key resource in public issues is radically different from accepting its automatic authority in framing what the issues are" (p. 8-9).

Anti-biotech's response to established normative assumptions

Pro-biotech materials from the CBI utilize convincing frames about the environment and a hungry planet, which are bolstered by a history of technological progressivism and scientism. In response, anti-biotech campaigns must wage their discursive responses on two fronts. Based on the analysis, two observations are made. First, opposing pro-biotech frames—such as the humanitarian value of GMOs feeding a hungry planet—requires extensive and thorough critique in order to refute the various claims made to promote agriculture biotechnology. Second, anti-biotech campaigns remain relatively stymied by dominant normative assumptions (i.e. scientific reasoning), contributing limited criticisms against the assumptions of scientific and technological progress.

Though not a Canadian crop, CBAN's extensive critique of GM 'Golden Rice' provides a strong and useful illustration of its opposition to pro-biotech frames that promote the humanitarian value of GMOs. In a 2014 factsheet, CBAN effectively challenges aspects of biotechnology linked to humanitarianism in regards to Golden Rice, the GM rice with added beta-carotene[38] to address vitamin A deficiency (CBAN, 2014a). CBAN carefully exposes several drawbacks to the long awaited promises of Golden Rice, including financial costs, inadequate testing, environmental risks, as well as the general notion that Golden Rice is

[38] The rice is engineered to produce beta-carotene which is then converted to vitamin A in the body.

prescriptive to an isolated issue within the larger problems of hunger and malnutrition (CBAN, 2014a). This eight page factsheet represents the complex critical research and campaign efforts needed for building an opposition to frames that are latched on to issues like global hunger and malnutrition.

Analysis of pro-biotech materials reveals a reliance on normative assumptions of scientific reasoning and technological progress. These dominant norms appear too established to receive an incisive critique in anti-biotech campaign materials. CBAN's mission is to promote "food sovereignty and democratic decision-making on science and technology issues". It is not a matter of criticizing science and technology out-right. Instead, CBAN's strategy is clearly a matter of problematizing the narrow approach to science utilized by pro-biotech industry and government actors. For example, in a flyer opposing GM salmon, CBAN (2011) writes:

> The FDA released two documents that summarize the data presented by AquaBounty as well as the FDA's own analysis of the company's science. But the data was widely criticized as woefully inadequate, shoddy science. In public meetings, the FDA's own committee members voiced serious concerns about the risks and the quality of the data.

This quote condemns the quality and adequacy of AquaBounty's scientific research. Scientific reasoning appears to maintain its dominant position (the primacy of sound science) in such treatments, waging only specific critiques against process and rigor. Future anti-biotech campaigns may benefit from wider a lens, including critiques regarding the necessity of progress and pointing to the value of diverse, non-scientific perspectives (see Stirling, 2009).

Finally, is it potentially more effective to withdraw from larger, more incisive and systemic critiques of the current agri-biotech system of production, assessment, and regulation? Might the adoption of dominant language and discourse be contributing to the success of anti-biotech campaigns? Successful protests against GM wheat, for example, attracted key supporters

by adopting less radical perspectives regarding the common denominator of economic concerns and potential market impacts (Magnan, 2007). Such perspectives can be viewed as less radical because they pose little to no challenge to the overarching system of agricultural production—advocates for radical change typically identify fundamental, far-reaching concerns of a systemic nature. Campaigns against rBGH had a similar experience with support from the Dairy Farmers of Canada (Andrée, 2011). Thus, the potential value of a more inclusive, and less radical, approach should not be discounted. At the same time, caution can be gleaned from Dauvergne and LeBaron (2014) who asked: "where are the radicals?" in their book on the corporatization of activism:

> Rarely now do "career" activists call for a new international economic order, or a world government, or an end to multinational corporations. Only a select few on the fringes, in the words of Greenpeace cofounder Bob Hunter, still struggle to "mindbomb" the world to form a new "global consciousness".

Although adopting rather than critiquing dominant discourse may prove successful in the short term, it may foster a climate of not-so-radical activism. Alternatively, is it more likely that successive incremental changes from within a dominant regime will be successful, instead of large-scale transformative changes? While GMO protests have been successful in Canada on numerous occasions, such as the resistance to rBGH in 1994 and GM wheat in the early 2000s, it will be important for future research to investigate why a wider shift away from agricultural biotechnology still seems like a distant goal.

Recently CBAN has released "GMO Inquiry 2015", a series of four reports that provide a thorough and incisive investigation of the impacts and risks of GMOs in Canada, focusing on impacts to the environment, consumers, and farmers (gmoinquiry.ca). These recent reports represent key examples of campaign efforts which effectively combine an opposition to general

processes and products of genetic modification as well as the systemic impacts of industrial agricultural and biotechnology more generally. More of such efforts are needed in the mobilization of long-term campaigns against the wider systemic issues and risks of GMOs—in addition to critiques of specific products. This is necessary for deconstructing pro-biotech discourses supported by powerful normative assumptions which make GM foods and crops appear as the prima facie solution to complex social and environmental problems associated with food and agriculture.

CONCLUSION

This study examines the state of agri-biotech discourse in Canada, including how the industry frames GMOs, the potency of these frames, and the responses of anti-biotech groups. Analysis of publicity and campaign materials reveals important power relations regarding efforts to inform public opinion on the topic of agricultural biotechnology. The power concepts adopted here offer categorical divisions that allow the analysis to be both specific and incisive. The four dimensional power framework presented in this study provides important empirical contributions to contemporary agri-biotech literature, particularly regarding the influences of discourse and power relations in the context of GMOs. This framework furthers our understanding of what is going on in the Canadian discourse on agricultural biotechnology, and advances the discussion of how actors and discourse interact within relations of power. Valuable theoretical and methodological insights are also made by combining literature on the different forms of power with methods of discourse analysis, advancing the conceptual connections between the power of actors and the power of discourse.

In this article, power relations are explored in two arguments regarding pro- and anti-biotech strategies for public influence. Both arguments contribute to literature on agricultural biotechnology, in particular, literature focused on the interconnections between knowledge, discourse, and power, as well as literature examining science communication on the topic of GMOs. First, I argue that the Canadian state's overall positive position toward agricultural biotechnology provides added leverage to pro-biotech publicity materials, while Canada's regulatory laws and favourable stance on GMOs predisposes anti-biotech campaign materials to certain forms of critique. This illustrates the interplay between the instrumental and structural power of the Canadian state and the deployment of discursive power in pro-biotech public relations. Second, I argue dominant pro-biotech frames receive a boost in potency because they are attached to popular values and constructed within historical, cultural, and normative understandings of "truth" production which increase their resonance—whereas anti-biotech campaign materials appear relatively stymied by the same conditions. This case demonstrates the underlying effects of constitutive power; dominant normative discourses act as a force outside the direct actions of the CBI. Incorporating constitutive power into this analysis helped to highlight aspects of agri-biotech power relations that are not emphasized in the current literature.

Overall, analysis reveals the complexity of power relations within agri-biotech publicity/campaign materials, and the extent to which anti-biotech groups are disadvantaged in these debates. The outlook, however, is not wholly negative, as the remaining uncertainties regarding GMOs work to erode levels of trust and credibility in reductionist approaches to scientific assessment. Complex problems with unsolvable uncertainties necessitate discussions of choice, priorities, and interests (Gibson, 2005); this means moving from reductionist scientific approaches, to more complexity oriented approaches (see Stirling, 2010). Wickson and Wynne

(2012) point to this phenomenon in the European context wherein scientific risk assessments have faced considerable criticism for their failure to recognize the ways in which values are embedded and intertwined in the conducting and interpreting of these assessments. Though such criticisms are not absent in Canada (see Clark, 2004), the policy and regulatory debates and changes in Europe are useful indications for what a Canadian system based on precaution may look like. This is due, in part, to the strong anti-GM sentiments commonly attached to European consumers and institutions (see Moses & Fischer, 2013). What is needed, as Stirling (2012) suggests, is "greater public engagement [that] offers an opportunity to be more rigorous about the uncertainties in bioscience innovation and more accountable about the exercise of power" (p. 1). Increasing public participation in decision making, such as through public consultation, may result in a policy regime closer to that of the European Union where bans and moratoria are more common (Howlett & Migone, 2010). This advice translates well for broader oppositions to the dominance of powerful norms and ideas in food and agricultural systems.

A fuller engagement with the many forms of power relations—particularly with the dominant normative frames that constitute discursive efforts to control opinion—will help make room for a more open-ended inclusion of public perspectives. In Kleinman and Kloppenburg's (1991) view, "critics are fighting against a deeply established set of meanings"; we need to broaden the debate beyond technical discussions among experts, towards a "consideration of equity in the social distribution of benefits from new biotechnology products" (p. 445). There is a need to push towards a more open approach to evaluating these technologies, one that adopts a plural understanding of progress in order to consider as many alternatives as possible (see O'Brien, 2000; Stirling, 2009; 2012).

Furthermore, a critical gaze must be applied to the impacts of a global food system that prioritizes efficiency and competitiveness; we need a better understanding of where our food comes from in order to recover our sense of community and develop alternatives to the current system (Carolan, 2016; Kloppenburg, Hendrickson, & Stevenson, 1996). This is a significant challenge, and may require an entirely new conceptualization of governing within the context of GM food production. Perhaps CBAN's recent undertaking, "GMO Inquiry 2015", will stimulate a turn toward further challenging the underlying logics and understandings that underscore the current food system in Canada, and elsewhere.

For Tomlinson (2011), there is a need for "identifying the 'sharp' key";[39] challenging the framing process of dominant institutions in order to re-think our global food system and make room for alternative framings to issues like "feeding the world in 2050". In Foucault's (1984) words, this is a matter of "ascertaining the possibility of constituting a new politics of truth"—the goal is not to overtake dominant ideologies with new ones, but to detach "the power of truth from the forms of hegemony, social, economic, and cultural, within which it operates at the present time" (p. 74-75). Further research is needed to develop ideas and strategies for challenging the norms, values, and hidden assumptions that constitute debates over agricultural biotechnology.

[39] Identifying the "sharp" key speaks to Tomlinson's (2011) reference to Mooney and Hunt (2009) who explore frames surrounding food security debates, and "identify 'flat' and 'sharp' keys of each of these frames; a 'sharp keying' is critical, suggestive of crisis and a challenge to dominant institutionalised social and discursive contentions, whilst the 'flat keying' of the frame tends to reinforce dominant institutionalised practices."

CHAPTER 5

Debating Bill C-18: An analysis of power and discourse in parliamentary proceedings on Canada's *Agricultural Growth Act*

Bill C-18 (Canada's Agricultural Growth Act) amended several pieces of agricultural legislation, most notably the Plant Breeder's Rights Act. Although the Bill received widespread support from many farm and seed organizations, the groups who critically opposed the Bill cited potential implications such as increased corporate control, further restrictions to seed-saving practices, and financial hardships. How were these highly divergent perspectives accounted for within law and policy formation? Using a framework based on multiple forms of power, this article contributes to a broader and more integrated approach to exploring the ways power dynamics get articulated in law and policy debates. Discourse analysis of 32 parliamentary documents helps to shed light on a range of patterns regarding power relations in the text and context of these debates. Based on this analysis, I discuss the relations of power that work together in an imbricated manner to produce an imbalanced climate for agriculture and agrifood law and policy development; one that prioritizes neoliberal ideas like economic liberalization, global competitiveness, and private property rights. Further research regarding these varied and complex power relations is necessary for improving equity and accountability within Canada's food system.

INTRODUCTION

Bill C-18, Canada's *Agricultural Growth Act* received Royal Assent in Canada on February 25, 2015. The governing Conservative Party introduced the Bill, and Members of Parliament (MPs) from the New Democratic Party (Canada's Official Opposition at the time), the Liberal Party, and the Green Party, all offered critiques of the Bill before it was passed[40]. Further, the National Farmers Union (NFU) was actively opposed to the Bill and offered witness statements in Parliament on two occasions. Two other organizations, Food Secure Canada and Les AmiEs de la Terre de Québec, also played important roles in opposing this Bill.

Apart from criticisms from the NFU and other likeminded groups, the Bill received strong, widespread support from farm and seed organizations across Canada. The coalitions of Partners In Innovation and GrowCanada (together comprising 28 farm and seed organizations) were instrumental in supporting the Bill. These organizations welcomed the possibility of increased choices regarding crop varieties as well as increased competitiveness and innovation in the global market. Doug Robertson, then President of the Western Barley Growers Association, explained that it is an important piece of legislation and that grower groups have been pushing the government to modernize legislation for quite some time (Telephone Interview, March 2015).

The introduction of Bill C-18 clearly sparked controversy; some organizations welcomed aspects of the Bill as long overdue, while other organizations viewed it as another significant step towards increased corporate control, and a loss of farmer sovereignty. The argument being

[40] The Green Party held the firmest opposition by being less willing to compromise, though this party had only one seat in the House of Commons, held by party leader Elizabeth May.

the Bill will (among other things) restrict seed saving practices of farmers while providing multi-national agri-businesses with increased revenues as well as increased controls through added intellectual property provisions in the *Plant Breeders Rights Act* (NFU, 2014a). How were these highly divergent perspectives accounted for within law and policy[41] formation? And what sorts of influences permeated the political decision-making? Using a framework based on multiple forms of power, this article contributes to a broader and more integrated approach to exploring the ways power dynamics get articulated in parliamentary debates. Such an approach provides a novel means for analyzing power relations within the discourse of agricultural law and policy development in Canada, and elsewhere.

A broad approach to examining power is adopted in this article to make further connections between actors, structures, goals, and ideologies within the development of agricultural law and policy in Canada. In recent decades the Canadian government has seen important shifts in agricultural policy; technological innovation, market-based approaches and greater collaboration with the private-sector have been accompanied by a rise in techno-scientific developments such as genetic engineering (Moore, 2002; 2007). Reviewing biotechnology policy in Canada, Abergel and Barrett (2002) point to the government's early emphasis on the economic potential of biotechnology, which preceded the explicit consideration of social and ethical issues. Relatedly, Andrée (2002)—utilizing Foucault's genealogical method to study the biopolitics of GMOs in Canada—discusses how the discourses emphasizing the technical aspects of GMOs focus debates on narrowly scientific assessments, effectively sidelining issues of

[41] The terms "law" and "policy" frequently appear together in this article to capture a broad view of political positions and decision-making, related to both legislation (e.g. the *Plant Breeders Rights Act*) and policy (e.g. Growing Forward 2). Growing Forward 2 is an agriculture and agrifood policy initiative which focuses on innovation, competitiveness, and market development (see Agriculture and Agri-Food Canada, 2015).

scientific uncertainty and complexity, as well as socio-economic, moral, ethical, and religious concerns. Policy goals, corporate interests, and discursive strategies are among the power relations directing Canada's agricultural laws and policies toward global economic growth and private property rights. By applying a four-dimensional power typology within a discourse analysis of parliamentary documents, this article contributes to such research by offering critical insights regarding Canadian parliamentary debates on agricultural and agrifood[42] law and policy.

Discourse analysis of 32 parliamentary documents helped to shed light on a range of patterns regarding relations of power in the text and context of debates on Bill C-18. Parliamentary debates on this Bill were thoroughly analyzed using methods of discourse analysis (see Findings) and then examined further using a four point theory of power (see Discussion). Such an undertaking benefited from a variety of perspectives and literature, including those of environmental studies, political science, global governance, philosophy, and rural sociology. This study outlines four ways these debates were influenced: (1) Interactions between the actors and organizations in these debates were preceded by *instrumental* advantages that supported the passing of the Bill, such as corporate lobbying and a Conservative majority government; (2) *structural* constraints, such as time allocation, were used to limit debate within parliament; (3) *discursive* framings of policy positions utilized common value assumptions to shape opinions; and (4) particular histories, norms, and ideologies comprise a *constitutive* influence on decision-making. Such forms of instrumental, structural, discursive and constitutive power are essentially imbricated together as they control the direction of decision-making. Overall, this direction

[42] "Agriculture" is used here to refer to animal and crop production, "agrifood" refers to food and beverage production/manufacturing, and used together "agriculture and agrifood" refers to the two sectors combined.

appears biased towards policies that reflect neoliberal[43] ideas, and are designed to maintain systems that support economic liberalization, increase private property rights, and stimulate Canadian innovation and global competitiveness. A fuller engagement with power dynamics is necessary for improving equity and accountability within Canadian agriculture and agrifood law and policy formation.

CONTRASTING PERSPECTIVES ON BILL C-18

Bill C-18, the *Agricultural Growth Act*, amended several key pieces of Canadian agriculture and agrifood legislation—the *Plant Breeder's Rights Act, Feeds Act, Fertilizer Act, Seeds Act* and five others[44]. Many of these amendments were identical across multiple Acts, in an effort to bring the legislation 'up-to-date'. In short, the Bill is said to "streamline legislation in the agricultural sector, increase access to new crop varieties, enhance trade opportunities and food safety, and reduce administrative red tape" (Healey, 2014). Language use, such as references to 'updating' and 'streamlining' legislation, are among the aspects evaluated in this study, as they

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[43] To be sure, focusing on neoliberalism as the source of embedded knowledges and discourses fails to account for the political economic theories, practices, and ideologies that preceded it, not to mention the varied and inconsistent definitions of neoliberalism. The concept of neoliberalism, as applied in this study, is understood as embedded in a historical timeline that dates back (at least) to nineteenth century liberalism, and is also constituted through different geographic developments and interpretations (see Andrée, 2007; Wolin, 2008; Dean, 2014). The present study can be viewed as taking a more pragmatic approach to applying the terms of neoliberalism and neoliberal discourse, using it as a category for effectively capturing a pervasive state-economy relationship that includes important, dominant ideas and practices that are currently found in much of the developed world (see Kinchy, 2012).

[44] This Bill also amended the *Health of Animals Act*, *Plant Protection Act*, *Agriculture and Agri-Food Administrative Monetary Penalties Act*, *Agricultural Marketing Programs Act*, and the *Farm Debt Mediation Act*. An analysis of all of Bill C-18's amendments and their potential impacts is outside the scope of this article.

point to important connections between discourse, power, and policy development. Amendments related to the expansion of plant breeders' rights (PBRs), the provision of "farmers' privilege" to save and reuse seed, as well as amendments for Incorporation by Reference and the Use of Foreign Evaluation, represent some of the key sites of contention regarding this Bill. Supporters of the Bill see it as a necessary, and long-awaited, step forward in improving many aspects of agricultural laws in Canada. In contrast, critics like the NFU target several amendments put forward in this Bill, viewing these changes as mechanisms to increase corporate control in the seed industry, erode farmers' rights to save seeds, and scale back input from Canadian researchers in certain decision-making processes.

Plant Breeders' Rights: Security or control?

Bill C-18 includes an amendment to the *Plant Breeders Rights Act*, which aligns Canada with UPOV '91, the latest (1991) rules of the *International Union for the Protection of New Varieties of Plants Act* (UPOV). UPOV offers a system of crop variety protection to its 72 member countries. Prior to this change, Canada was party to UPOV's 1978 Act. Although new provisions made under the 1991 Act raised some concerns regarding the expanded PBR privileges, several organizations supported these changes. According to the Grain Growers of Canada (2015), changes to the PBRs provide a level of security that ensures farmers remain competitive with access to the latest seed varieties, and ensures breeders' investments in these varieties are protected.

Among the new rights granted to plant breeders under Bill C-18 is an extension of the length of time these PBRs are upheld. The Bill amended the "Term of Rights" of the *Plant*

Breeders' Rights Act, extending the default term of PBRs from 18 years to 20 years, except for trees and vines, which increases rights from 20 years to 25 years (Library of Parliament, 2014, p. 8). This amendment has important implications for farmers and breeders on its own, simply by providing breeders further opportunity to make financial gains on their breeding investments. However, this extension of breeder's rights also interacts with Variety Registration regulations. In May 2014, the *Seeds Regulations* were amended to include a new provision under which a registrant (the person or organization which registers a plant variety) may request the cancellation of a variety's registration (see Section 74(j) of the *Seeds Regulations*, c. 1400). According to the NFU (2014b), as of 2014 "PBR holders are now in a position to withdraw varieties before their exclusive rights expire, and can use this power to prevent older varieties from being commercially useful once they enter the public domain, increasing the pressure on farmers to use the seed that is subject to royalty payments" (p. 6). Breeders are now given 20 years to collect royalties, and at the end of this term they can cancel the variety's registration to severely limit its use as a public, royalty-free seed variety.[45] Glenn Tait, a member of the NFU, expressed concerns that Canada is "heading towards a variety treadmill" (Telephone Interview, April 2015). Protection through contracts and patents, and the ease of registration and de-registration, help to keep farmers buying new varieties each year. Bill C-18 made another change to PBRs, which is also a direct result of aligning the *Plant Breeders' Rights Act* with UPOV

[45] This is an important connection between Bill C-18 and the recent changes to the Variety Registration regulations. Bill C-18's extension of Term of Rights from 18 to 20 years allows breeders two more years of royalty collection before they can opt to unregister a variety. This is a summation of the policy interactions between Bill C-18 the *Seeds Regulations*, and refers to conditions such that variety registrants are also PBRs holders, or are in a business partnership with PBR holders (as many are) (NFU, 2014a). It should also be noted that farmers benefit from plant varieties that are beyond their protected 'Term of Rights' period, but are still registered, since most crops can only be sold at full price if they are registered plant varieties (NFU, 2014b).

1991—the introduction of a “Farmers’ Privilege”, an important and widely debated amendment regarding seed saving.

Farmers’ rights/ Farmers’ privilege

A Legislative Summary of Bill C-18 explains that the Bill adds a new section, 5.3(2), to the *Plants Breeders’ Rights Act*, which allows farmers to use their harvested seeds from the protected plant varieties on their own holdings (Library of Parliament, 2014). Further, the House of Commons Standing Committee on Agriculture and Agri-Food made an amendment to this section, clarifying “that this farmers’ privilege includes the right to store and stock seeds as well as produce, reproduce and condition seeds” (Library of Parliament, 2014, p. 7). These provisions are well aligned with the recommended framework of UPOV ‘91. UPOV ‘78 makes no specific mention of replanting seeds of protected varieties (meaning there were no set rules permitting or prohibiting seed saving), the 1991 Act of the UPOV Convention specifically outlines an optional exception for farmers to replant seeds on their own farms (UPOV, 2011). Further, it is recommended that the restriction of breeders’ rights should be “within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder” (UPOV, 2011). The UPOV rules regarding seed saving point to important power relations regarding the privatization of seeds and the changing roles (and rights) of farmers. This section of the Bill on a “farmers’ privilege” to save seeds sparked considerable debate among farm and seed organizations, including the Canadian Federation of Agriculture (CFA) and the NFU.

Organizations supportive of Bill C-18, such as the CFA, only sought further clarity regarding the details of what the section on farmers' privilege will mean. According to the CFA (n.d):

> There has also been controversy over whether the word privilege needs to be changed to right. For CFA, so long as the privilege includes all the requirements farmers need to keep producing seed they legitimately purchased, the CFA believes it is a non-issue.

The phrasing used by the CFA is important here, as they point to the controversy over the issue of farmers' privilege and the aim to carve out a middle ground wherein a specific form of seed saving is protected, regardless of being written in law as a privilege or right. Attention to wording like 'privilege' is part of a wider opposition to the long-term push to advance the 'rights' agri-business have over their seeds. The NFU (2014c) argues that UPOV advises governments to "be prepared to limit or avoid granting farmer privilege too widely" and to ensure "that the Plant Breeders' interests are taken care of first" (p. 2). Both the NFU and Food Secure Canada (FSC) cited concerns regarding this section of the Bill, particularly because of the possibility that changes will be made in the future that further limit the seed saving practices of farmers (see FSC, 2014). An important aspect of the opposition from organizations like the NFU and FSC is their attention to the future; these organizations view these changes as part of an overall erosion of farmers' autonomy with potential implications over time. In addition to the aforementioned amendments to the PBRs, which harmonize Canada with UPOV '91, there are other important provisions within Bill C-18 which have wide reaching implications—these include the incorporation and use of external resources in regulations and evaluations.

Streamlining legislation or limiting Canada's voice?

Using identical language in each of the five Acts, Bill C-18 amends the *Feeds Act*, *Fertilizer Act*, *Seeds Act*, *Health of Animals Act*, and the *Plant Protection Act* to include a provision called "Incorporation by Reference" (House of Commons, 2013-2014). The amendment permits these Acts to "incorporate by reference any document, regardless of its source, either as it exists on a particular date or as it is amended from time to time" (House of Commons, 2013-2014). The five aforementioned Acts also include provisions which explain that "the Minister may consider information that is available from a review or evaluation […] conducted by the government of a foreign state or of a subdivision of a foreign state or by an international organization, or association, of states" (House of Commons, 2013-2014). The latter is referred to as "use of foreign evaluation" in shorthand. The wording in both of these amendments is an important site of analysis; the wording ensures the federal government can incorporate into regulations information from a very wide range of sources, and that changes over time can also be accounted for as well. Both of these amendments are part of the Bill's overall intention to "streamline" legislation and "reduce administrative red tape".

In the view of the Canadian Seed Trade Association (CSTA), a key supporter of Bill C-18, these amendments (referring to the Bill's changes in the *Seeds Act*) could help speed up the approval and registration processes for seed varieties (CSTA, 2014). In contrast, the NFU (2014b) argued "that incorporation by reference will be used primarily as a mechanism to accelerate regulatory harmonization and to give multinational agribusiness corporations more influence over our agricultural regulations" (p. 2). As these positions are not completely contradictory, it is possible these amendments both streamlined legislation and also placed

limitations on the capacity of Canadian researchers and the Canadian public to influence agricultural legislation. By adding in the amendments of "incorporation by reference and "use of foreign evaluation" the Canadian state moves further toward accelerated policy development based on pre-existing information; in this way the capacity to develop positions based on Canadian research and public consultations is diminished.

Overall, endorsements for—and critiques against—Bill C-18 are extensive. Farm and seed organizations on either side of the debate have carefully articulated their positions, but the direction of law and policy development appears biased towards economic liberalization, global competitiveness, and privatization. Exploring how these divergent perspectives were accounted for within parliamentary debates is necessary for further understanding the role of power in agriculture and agrifood law and policy formation. Through actors' roles, relations, and social context, power is a key aspect in the debates over this Bill.

POWER IN FOUR DIMENSIONS

A closer look at the power dynamics in debates over Bill C-18 reveals important patterns with regard to the prioritization of certain policy directions, and the influences of particular actors. Engaging with a broad and complex conceptualization of power enables the examination of overt, embedded, and underlying influences. As a concept and analytic tool, *power* has been defined and categorized with considerable depth and breadth (see Lukes, 1974; Barnett & Duvall, 2005a; Haugaard, 2012). A compilation of several perspectives affords this study the theoretical strength and scope to identify some of the key power relations and interactions within parliamentary debates over Bill C-18. As theoretical understandings of power have developed,

useful categories and typologies for conceptualizing power relations have emerged. A four dimensional understanding of power is utilized in this analysis. Clapp and Fuchs' (2009) use of *instrumental*, *structural*, and *discursive* forms of power are explored and extended with literature outlining a fourth dimension. The addition of *constitutive* power[46] captures key aspects regarding the production of subjectivity as outlined by Barnett and Duvall (2005a; 2005b), Digeser (1992), and Haugaard (2002; 2012), Ryan (2014) among others.

Instrumental power is a concept built from Dahl's (1957) focus on actors' capacity to influence actions/events through their own actions. Clapp and Fuchs (2009) developed this term to examine the influence of agri-food corporations on global food systems. For instance, corporate lobbyists have the capacity to directly influence policy formation (Clapp & Fuchs, 2009). Instrumental power accounts for "a range of relations between actors that allow one to shape directly the circumstances and/or actions of another" (Barnett & Duvall, 2005a). Smythe (2009) explains the Canadian government's strongly supportive position on biotechnology also represents a form of instrumental power. Lobbyists and government support represent significant relations of power in the development of Bill C-18.

Bachrach and Baratz (1962) extend Dahl's (1957) conceptualization to include a second "face" of power which investigates the "mobilization of bias"; actors exert power by "creating or reinforcing social and political values and institutional practices that limit the scope of the

[46] I have chosen the term *constitutive* power, which is consistent with the language (which draws heavily from Foucault) used to describe this form of power (see Digeser, 1992; Haugaard, 2002). The term constitutive also reflects what Barnett and Duvall (2005) refer to as "social relations of constitution", which involves a like-minded application of the fourth dimension of power. In terms of past uses of the term, some authors position constitutive power as possessed and deployed by actors, such as the state (see Browning & Christou, 2010; Neocleous, 1996), while others view it as embedded in socially and historically developed norms and discourses (see Davies, 2002; Ryan, 2014; Rye, 2014; Trowler, 2001). The present study adopts the latter view.

political process" (p. 948). This form of power is referred to as *structural* power, an example being agri-food corporations articulating disincentives such as the consequences of lost jobs or added costs to farmers and consumers if too many restrictions and regulations are placed on the industry (Clapp & Fuchs, 2009; Smythe, 2009). Similarly, the need for regulations which do not limit investment opportunities was a recurring theme within debates over Bill C-18. These two dimensions (or "faces") of power represent instances of control based on the interaction of certain actors (Barnett & Duvall, 2005a). Steven Lukes' work adds a third dimension wherein actors exert power, but not through direct and explicit interactions.

A third 'dimension' of power explains how subjects being influenced can act voluntarily, without conflicting interests. This form of power accounts for modifications in actors' values and beliefs that are contrary to their best interests (Lukes, 1974; 1986). Clapp and Fuchs (2009) refer to this third dimension as *discursive* power; it precedes decision-making and involves the framing of issues around norms and values[47]. This form of power acknowledges the role of media and other public relations mechanisms in framing political issues (Clapp & Fuchs, 2009). For example, Tomlinson (2011) usefully problematizes the consistent framing of food security around the idea that doubling global food production by the year 2050 is necessary to keep up with population growth. Framing issues through the use of language and ideology is a key part of decision-making and policy development; which norms and values are called upon to argue for a particular policy direction is an important focus of this article. These three dimensions of power

[47] It is important to note that these categories, particularly discursive power, are not necessarily mutually exclusive. Barnett and Duvall (2005a) note "discursive processes and practices produce social identities and capacities as they give meaning to them" (p. 21). As such, an engagement in discursive strategies plays an active role in the production of subjects (constitutive power).

are usefully operationalized by Clapp and Fuchs (2009), but can be complemented by a fourth dimension—what I refer to as *constitutive* power.

Constitutive power diverges significantly from the first three dimensions of power, focusing on the influence of embedded norms and discourses, and the construction of subjects ('subjectification') as opposed to their agency. This form of power focuses on "the socially diffuse production of subjectivity in systems of meaning and signification" (Barnett & Duvall, 2005b, p. 43)[48]. For instance, Solli, Bach, and Åkerman's (2014) study reveals the ways in which perspectives regarding the privileging of scientific claims regarding GMOs is, in part, learned within the university context. This is an important aspect of constitutive power, though it is also important to understand this form of power as an embedded and established set of meanings which privilege certain forms of knowledge. This perspective of power is analytically historical, incorporating the study of symbols, gestures, liturgy, etc. (Dean, 2012). Digeser (1992) and Dean (2010; 2012) offer a useful explanation of this type of power, grounded heavily in the work of Michel Foucault. Dean (2010) explains that it is useful to look beyond "the identification of agents of power" and to "attempt to understand the kind of power relations in which such forms of agency appear" (p. 461). Constitutive power is a form of power that is not wielded by actors operating towards their own perceived ends, but instead helps to make certain power relations possible.

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[48] Barnett and Duvall (2005a; 2005b) divide this form of power into "structural" and "productive" power, both of which represent "social relations of constitution". The two forms are combined into *constitutive* power here to provide a clearer complement to the first three forms of power described, and to avoid the duplication of the term "structural". A broader evaluation of the insights, differences and limitations between power theories is beyond the scope of this article.

As Dean (2012) explains, the first three faces of power imply a 'zero-sum' relationship that focuses on power as a possession—the actions of powerful actors subtract power from others. Constitutive power, however, is not possessed but rather forms the space for exercising power through the historical development of norms and discourses in which actors participate and interact (Digeser, 1992). Furthermore, it comprises the background conditions that form subjects and help to enable the capacity for certain forms of agency (Digeser, 1992). For example, Andrée (2005) explains that conventional modern scientific reasoning plays an influential role on what makes sense. Actors without that kind of scientific-technical knowledge are limited in their capacity to influence policy, regardless of their level of interest in the policy outcome (Andrée, 2005). This form of scientific reasoning enables and constrains the capacity for agency, or rather the capacity to possess and exercise power. Constitutive power enables a range of power relations regarding normatively and historically established ideas; additional examples include expectations regarding economic reasoning, properly scientific evidence, and democratic decision-making wherein actions too far outside the norm become more challenging to advance. This conceptualization of power is a useful complement to the other three dimensions, and I argue all four are valuable tools/concepts for exploring and uncovering power relations within agricultural and agrifood law and policy development.

These four dimensions of power are utilized in this study to extend the scope of discourse analysis, helping to uncover important sites of power and control. This study's discourse analysis comprised an examination of text from parliamentary debates, the context of these debates, and a reflexive interpretation of such texts and contexts in light of the norms, histories, and ideologies from which they have emerged. As such an examination engages with conditions of power and

control, a broadened conceptualization of power offers this study a unique and effective approach in which to analyze discourse.

DATA AND METHODS

Discourses are analyzed in this study in order to expose the multiplicity of elements which create meaning and represent social life, thereby impacting what is debated in policy making and how certain ideas and positions are interpreted and pursued. Such an analysis matches well with a multi-dimensional power framework, allowing a diverse exploration of social interactions and relations from an in-depth examination of parliamentary discourse. A total of 32 individual documents were compiled for analysis. The analysis was limited to materials published from Canada's 41st Parliament, 2nd Session Sittings and Meetings of the House of Commons and Senate for Bill C-18, the *Agricultural Growth Act*. These sittings and meetings took place from December 9, 2013 to February 25, 2015. All materials were collected from the Parliament of Canada website (www.parl.gc.ca). Discourse analysis was conducted using a combination of manual coding and automatic coding using the qualitative data analysis software *Atlas.ti*.

The documents were coded and analyzed in an iterative process, utilizing insights from sociological discourse analysis (see Ruiz Ruiz 2009) and critical discourse analysis (see Jäger 2001; Fairclough 2001; 2013). The framework of analysis used in this study involves an iterative combination of textual analysis, contextual analysis, and reflexive interpretation. First, *textual analysis* involves looking at the wording, metaphors, and other grammatical elements of a text (Jørgensen & Phillips, 2002). The repetition of particular terms (e.g. "investment"), and the logical structure of arguments are examples of what is examined in this phase. Second, *contextual analysis* involves outlining the context of the material being analyzed, including

considerations of authorship, audience, and dissemination. It is a review of the time and space in which discourses appear and gain their meaning (Ruiz Ruiz, 2009). Third, *reflexive interpretation* "involves making connections between the discourses analyzed and the social space in which they have emerged" (Ruiz Ruiz, 2009, p. 25). Constitutive power plays a key role in the interpretation of emergent social spaces based on historically embedded norms, meanings, and ideologies. This phase of analysis involves a sociological interpretation of discourse, and it takes place before and after the phases of textual and contextual analysis—"analysis is conducted in a constant and bidirectional manner among these three levels" (Ruiz Ruiz, 2009, p. 25). Results from the analysis of parliamentary debates on Bill C-18 are outlined below in the Findings section, and then examined further using four dimensions of power (see Discussion).

FINDINGS: TEXT AND CONTEXT IN PARLIAMENTARY DEBATES

An analysis of transcripts from meetings in the House of Commons, the Senate, and their respective committees[49], reveals useful details regarding power relations within parliamentary debates on Bill C-18, as well as insights toward Canadian law and policy development in general. Documents were analyzed based on the three phases of discourse analysis discussed above: (1) textual analysis identified central codes and themes within and between the debates, such as the focus on economic growth and investment; (2) contextual analysis, which focused on authorship, audience, and normative context, identified powerful actors, organizations, and

[49] After the Bill's Second Reading in the House of Commons, it was reviewed by their Standing Committee on Agriculture and Agri-food. After the Bill's Second Reading in the Senate, it was reviewed by their Standing Senate Committee on Agriculture and Forestry.

coalitions engaged in these debates; and (3) reflexive interpretation based on an examination of assumptions underpinning core arguments, as well as the histories and norms used to help to define their meaning, revealed technological progress, neoliberalism, and scientific expertise as key guiding ideologies.

Findings: Textual analysis

The various codes developed from the analysis represent key recurring texts, or *discourse fragments* as Jager (2001) refers to them, which represent—or belong to—a specific theme or meaning. That is, different terms and phrases were coded together when they were intended for the same use or meaning. The codes identified can be categorized into at least three useful themes, which I have termed "keeping pace", "standard/non-standard", and "fairness". **Keeping pace** refers to the recurring arguments articulating the importance of "updating" and "modernizing" agricultural legislation to keep pace with other developed countries. **Standard/non-standard** refers to the polarization created between breeders and farmers, conventional and organic (or smaller scale) farmers, private and public research, scientific and non-scientific research, experts and non-experts, and so on. **Fairness** refers to discussions on democratic process within Parliamentary debates, as well as references to preferred outcomes of the Bill. Particularly, the notion of finding a "balance" (for instance, between the priorities of farmers and breeders) was a dominant code. And, the insistence by opposing parties that Bill C-18 is an "omnibus" bill that covers too much information to sufficiently debate, was ubiquitous. These categories represent central themes, textual patterns, and focal points in the Parliamentary

debates over Bill C-18. Descriptive statistics on these codes and categories are detailed below in Table 1, and are reflected on further in the Discussion section.

Theme	Code	Count in House of Commons Committee	Count in Senate Committee	Total Count
Keeping pace	Keeping Pace	2	4	6
	Investment(s)	190	122	312
	Modern(ization)	37	13	50
	Update/Updating	31	22	53
	Competition	83	52	135
Standard/non-standard	Science/Scientific	57	23	80
	Expert(s)	10	10	20
	Heritage	13	4	17
	Traditional	21	5	26
	Small-scale	93	50	143
Fairness	Balance	13	14	27
	Omnibus	11	2	13
	Time allotment	135	2	137

Table 1: Code counts for three key themes developed from a textual analysis of House of Commons and Senate Committee meetings on Bill C-18

Findings: Contextual analysis

This phase of analysis explored the discourse positions of actors involved in debating Bill C-18, as well as the local norms governing discursive interactions in Parliament (see Ruiz Ruiz, 2009). The two key findings from this phase are the meanings and influences tied to the private sector actors that endorsed Bill C-18, as well as the use of the parliamentary practice of time allocation. Though the positions and characteristics of actors opposing the Bill were analyzed, their involvement in parliamentary debates was not identified as emanating from powerful partnerships, organizations, and social structures. Instead, the involvement of opposing voices in House of Commons and Senate committee meetings appeared more as a like-minded collection of voices representing important critiques and counterpoints to the proposed Bill.

Partners in Innovation and GrowCanada usefully illustrate the complex network of actors in support of the Bill. According to their website, Partners in Innovation represents "a diverse group of farm organizations and value chain groups from across Canada", comprising a total of 20 regional and national farm organizations[50]. GrowCanada is a partnership of 15 organizations, comprised of several members of Partners in Innovation[51], as well as two key trade and industry associations: CropLife Canada and BIOTECanada. Explaining CropLife's connection to various stakeholder groups, Dennis Prouse (Vice-President, Government Affairs, CropLife Canada), spoke as a witness in the House of Commons, stating: "[w]e also work very closely with a number of stakeholder groups. We're very proud of the fact that all of Canada's major farmer-based grower groups are members of our GrowCanada partnership" (House of Commons, Committee Meeting 039, 2014, p. 11). Significantly, CropLife's membership includes Monsanto, Dupont, Syngenta, Cargill, Bayer CropScience, and 30[52] others (CropLife Canada, 2015). The former three being the largest seed companies in the world, each with seed sales in the billions (USD), representing 53% of the world's market combined (ETC Group, 2011). The number of organizations which vocalized support for Bill C-18 is significant and the participation of these actors contributes to the overall context of parliamentary debates (see Table 2).

[50] Details on the Partners in Innovation can be found on their website: partnersininnovation.ca

[51] GrowCanada comprises 7 members from Partners in Innovation, all of which had witnesses provide supporting statements on Bill C-18 to Parliament.

[52] Many of these organizations are smaller-scale firms. Debate over the scale of breeding firms and farmers is an important detail in the discourse on Bill C-18, but is outside the scope of this article.

Organization Name	Member of Partners in Innovation	Member of GrowCanada	House of Commons Meetings, Bill C-18	Senate Meetings, Bill C-18	Registered lobbyists in Canada
Atlantic Grains Council	✓				
Alberta Barley Commission	✓		✓		✓
Alberta Pulse Growers	✓				
Alberta Wheat Commission	✓				
Barley Council of Canada	✓	✓	✓		✓
BIOTECanada		✓			
British Columbia Grain Producers Association	✓				
Canada Grains Council		✓			
Canadian Canola Growers Association	✓	✓	✓	✓	✓
Canadian Horticultural Council	✓	✓		✓	✓
Canadian Ornamental Horticulture Alliance	✓		✓		✓
Canadian Federation of Agriculture	✓	✓	✓	✓	✓
Canadian Fertilizer Institute		✓	✓		✓
Canadian Potato Council	✓				
Canadian Renewable Fuels Association		✓			✓
Canadian Seed Trade Association	✓	✓	✓	✓	✓
Canola Council of Canada		✓			✓
Cereals Canada	✓	✓	✓	✓	
CropLife Canada		✓	✓	✓	✓
Federation des Producteurs de Cultures Commerciales du Québec	✓		✓	✓	
Grain Farmers of Ontario	✓		✓	✓	
Grain Growers of Canada	✓	✓	✓	✓	✓
Manitoba Pulse Growers Association	✓				
Mustard 21	✓				
Prairie Oat Growers Association	✓				
Pulse Canada		✓			✓
Soil Conservation Council of Canada		✓			
Western Canadian Wheat Growers Association	✓		✓		

Table 2: A comparison of select organizations supporting Bill C-18

Table 2 captures a useful comparison of select organizations from the memberships of Partners in Innovation and GrowCanada. This comparison aids in the analysis of cooperation efforts among organizations supporting Bill C-18 and identifies which organizations belong to Partners in Innovation and GrowCanada, which organizations were represented by witnesses speaking at Parliamentary meetings for the Bill[53], and which of these organizations have active, registered lobbyists in Canada. Although further, more extensive comparison is needed regarding the patterns and connections between these organizations, this table provides a useful depiction of actors who influenced the context of parliamentary debates through their capacities for instrumental and structural power, relative to other organizations with fewer resources.

'Time' is another significant finding from the contextual analysis. 'Time' developed as an important code in the discourse analysis regarding discussions over how much time is necessary to effectively analyze the range of issues in this Bill. Explicit (and some implicit) references to allotments of available time for making speeches was revealed as a key marker of context in these debates. Typically the allotment of clock time is "allocated to speakers by the Chair or by leaders of a debate, and scrupulously measured and administered" (van Dijk, 2004, p. 357). Time developed into a major coding category during analysis, with the discussion of "time allocation" as one of the most pertinent references to time. *Time allocation* is a rule that

[53] The column "House of Commons Meetings, Bill C-18" refers to the meetings of the Standing Committee on Agriculture and Agri-food, which took place in 2014. The column "Senate Meetings, Bill C-18" refers to the meetings of the Standing Senate Committee on Agriculture and Forestry, which took place in 2014 and 2015. Organizations attending as witnesses in House of Commons Committee meetings were each given six minutes (frequently shortened to five minutes) to present their position on the Bill. It was common for more than one individual to represent an organization, and in these circumstances time was divided equally between speakers representing the same organization. Specific accounts of the time allotted to witnesses speaking at Senate Committee meetings were not found.

"allows the government to impose strict limits on the time of debate" (Marleau & Montpetit, 2000). Concerns raised (by MPs from the Opposition) over the use of time allocation represent an important strategy for limiting debate. As Nathan Cullen (NDP MP) framed it:

> The second challenge is that the Conservatives have grown quite addicted to a technique called time allocation. What that means is that rather than negotiating with the opposition to decide how many days of debate a certain piece of legislation might get, the government invokes and enforces the shutting down of debate even as the bill is being introduced. (House of Commons, Second Reading, Number 105, p. 6961)

References to time, and the structural constraints of time allotments, were an important finding from the discourse analysis. Circumstances in which time for debate is prevented, as well as circumstances wherein speeches are rushed, cut-off, and/or pressurized due to time constraints, have important implications regarding imbalanced power relations in parliamentary debates. Time is used as a form of instrumental and structural power, controlling the context of the debate by covering several topics in a minimal period of time. This can create imbalanced conditions for debating and developing law and policy. These connections between context and power will be explored further in the Discussion section.

Findings: Reflexive interpretation

In this phase of the analysis, the focus is on the interpretation of discourse as ideology—"which aims to demonstrate how social discourses are impregnated by dominant discourses projected from sources of power" (van Dijk, 1999 as cited by Ruiz Ruiz, 2009). Separating the minutes of Parliamentary debates into clear categories, such as by political party, or support for/opposition to the Bill, allowed for an analysis of normative and ideological perspectives, and an assessment

of power relations within these perspectives. Reflexive analysis and interpretation of parliamentary debates revealed three important themes: the coupling of increased economic growth with the ethic of feeding a growing population; a marginalization of values associated with food sovereignty; and neoliberal ideas which prioritize growth, competition, and privatization.

Increasing global food production to match global population growth is a recurrent phrase articulated to justify technological directions that prioritize increased yields. In June 2014, the same time Bill C-18 was being debated in the House of Commons, the Senate Standing Senate Committee on Agriculture and Forestry published their report "Innovations in Agriculture: The Key to Feeding a Growing Population". This report explains that increasing the rights of plant breeders (and the growth of breeding corporations) is needed to meet the growing food demands of a growing world. Associating expected global population growth with the need for changes in Bill C-18 was common, appearing 11 times throughout the Bill's debate in Parliament. To illustrate, Gary Stanford, President of the Grain Growers of Canada, reported in a witness statement:

> In closing, we urge the committee to pass Bill C-18. With the world's population expected to reach 10 billion by 2050, Canada's grain producers will need the most innovative technology and the newest varieties in order to maximize production and minimize environmental impacts (House of Commons Committee Meeting 40, p. 6).

This excerpt from Stanford's speech is typical of the messages put forth throughout the debates on Bill C-18. A total of eight separate statements (from CPC MPs) reference the population projections for 2050, and the need for additional mechanisms (like those in Bill C-18) for meeting a growing food demand.

The marginalization of values associated with food sovereignty was another important finding from the analysis. According to Wittman (2011), food sovereignty refers to "the right of local peoples to control their own food systems, including markets, ecological resources, food cultures, and production modes" (p. 87). The marginalization of values associated with food sovereignty is evident throughout the Parliamentary materials analyzed, not only in the minimal inclusion of related terms, but more pointedly in the lack of response or acknowledgement to the topic when it was raised in debate. Bill C-18's potential impacts to issues related to food sovereignty were introduced in Parliamentary debates by both an MP and a witness, but when these concerns were introduced they were not debated or addressed with substantial responses. The importance of food sovereignty was commented on by two NDP MPs, Alex Atamanenko (twice) and Jean Rousseau. Yet, the most significant reference to food sovereignty within the debates was by Ariane Gagnon-Légaré, a Community Organizer for Les AmiEs de la Terre de Québec, who spoke as a witness at a House of Commons Committee Meeting (No. 039) as well as a Senate Committee Meeting (No. 23). Gagnon-Légaré's position is well captured by the statement:

> Through our work concerning agricultural biodiversity, its recognition as the common heritage of humanity, open access to seeds and democratic participatory management, we are seeking to advocate for food sovereignty. (Standing Senate Committee Meeting No. 23, p. 127)

This position on food sovereignty was not taken into further consideration and debate. Instead, Gagnon-Légaré was probed about her speech with questions such as:

> Ms. Gagnon-Légaré, I have a question for you. In your presentation, you use words such as ''profit'' and ''large companies'' like they are bad words. I'm not sure how anybody is supposed to continue to eke out a living when they don't make profits, and large profits are good. (Senator Plett, Standing Senate Committee Meeting No. 23, p. 133)

Senator Plett's use of language (and the underlying ideological assumptions) is reflective of an overall trend among the discourse analyzed, which identifies a dominance of neoliberal ideas that prioritize growth, competition, and privatization—particularly within the speeches made by MPs from the Conservative party (CPC). This use of language is consistent with the broader principles of the CPC, as stated in their Constitution. Belief in a free competitive market economy, limited government, and the right to own property, are all listed as values which guide the party's policy directions (National Constitution Committee, 2016). Neoliberalism, though not consistently defined, is used here to represent a hands-off approach to economic regulation, and a reinforcement of "strong private, individual, and exclusive property rights (Heynen, McCarthy, Prudham, & Robbins, 2007, p. 5). Several codes and thematic categories from the analysis fit well into this finding, such as "growth" and "innovation". All of the codes/terms investigated regarding a dominance of a neoliberal ideology are detailed in Figure 1, which organizes word use statistics by political party from a key debate over Bill C-18, the first round of speeches in the House of Commons (Second Reading, Number 055).

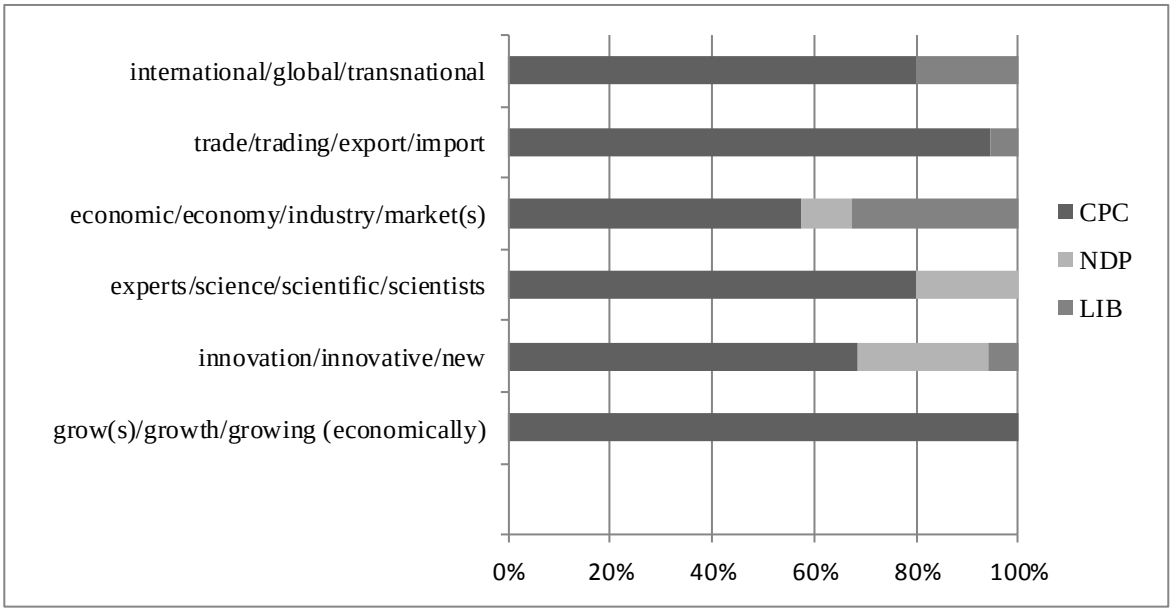

Figure 1: Word Use Statistics by Political Party. Bill C-18, Second Reading, House of Commons Debates, Volume 147, Number 055[54]

The results show a much higher frequency of word use by CPC MPs in all of these categories, which provides an indication of their attachment to these concepts, and relatedly, a neoliberal ideology. An excerpt from Gerry Ritz's first speech in the House of Commons for Bill C-18 further illustrates the CPC's devotion to science, innovation, and competition. He states:

> With the agricultural growth act we would be modernizing Canadian legislation on a foundation of science, technology, innovation, and international standards. The proposed legislation would bolster the competitiveness of Canada's agricultural sector while ensuring a consistent regulatory approach across all commodities. (House of Commons Hansard 055, p. 3397).

[54] To ensure an accurate comparison between speeches, the word count analyzed for each party was controlled to 4,000 words (the approximate length of the speeches made by the Liberals, as the NDP and CPC speeches were longer). The Green Party was not included in the analysis because none of the terms were used in Elizabeth May's comments (341 words).

An additional finding regarding the dominance of neoliberal ideas, which prioritize growth, competition, and privatization, is the lack of critical evaluation of these ideas by the opposing parties. Whether or not this finding is expected and unsurprising, it is important to point out that debate and/or disagreement over the importance of growth, competition, technological innovation, and international trade were essentially absent[55]. These findings are explored further in the following section, using the four-dimensional power framework outlined previously.

DISCUSSION: POWER AND BILL C-18

Power relations appear in varying forms, from structures and relations to everyday norms and social practices. Analysis reveals important power relations working through direct, instrumental actions, as well as within more indirect, structural biases and discursive frames. Furthermore, constitutive social histories and conditions help to position these power relations as normal. Influences on law and policy formation are discussed in this section utilizing the multi-form approach to power discussed previously. There are four key influences which, combined, appear to exert significant control over the direction of decision-making: (1) Interactions between the actors and organizations in these debates were preceded by *instrumental* advantages for supporters of the Bill (e.g. corporate lobbying); (2) *structural* constraints, such as time allocation, were used to limit debate within parliament; (3) *discursive* framings of policy positions utilized common value assumptions to shape opinions; and (4) particular histories,

[55] The only discussion from the Opposition regarding this ideological theme of neoliberalism was over privatization vis-à-vis the importance of public breeding programs. To varying extents, the NDP, Liberals, and Green Party all reported that public breeding programs need to be protected and/or promoted.

norms, and ideologies comprise *constitutive* background conditions which underlie the three other categories of influences.

(1) Instrumental advantages of government and corporate actors

Instrumental power is expressed by the Conservative party's capacity as the majority government at the time and the lobbying power of supportive organizations. Research findings regarding the instrumental advantages of government and corporate actors are highlighted by the contextual analysis of actors supporting the Bill, and the textual theme of 'Fairness' also illustrates these advantages, particularly in the inattention to the NDP's concern for finding a 'balance' in the Bill's priorities.

A total of 170 Conservative MPs formed the majority government for the 41st Parliament of Canada[56]. Although the power of a majority government is not necessarily absolute, it operates with considerable influence regarding the introduction and passing of new bills. According to Malcolmson, Myers, and Myers (2009), due to a party's influence over their MPs' votes, "a cabinet backed by a parliamentary majority is almost guaranteed the automatic confidence of the House" and can generally "govern as it wishes" (p. 47). During the Second Reading of Bill C-18, several comments established the perceived impact of the Conservative's majority. Bruce Hyer, then an MP in the Green Party, stated:

> In terms of process, what worries me is that with a bill of this scope…We need to have more information. I would like the hon. member for Timmins—James Bay to give us his thoughts on the

[56] During the period the Bill was being read in Senate, and studied by the Senate Standing Committee, the Conservatives held approximately 60% of the seats in Senate.

> process of ramming and cramming this bill through in such a last-minute, draconian fashion. (Second Reading, Number 104, p. 6860)

And NDP MP Carol Hughes remarked:

> The Conservatives see the summer coming, and they are trying to get as much under their belts as possible, but at what risk? We need to have proper debate on this bill. (Second Reading, Number 105, p. 6958)

Commenting on the point that Bill C-18 was introduced by a conservative majority, Alex Atamanenko (then NDP MP, British Columbia Southern Interior) explained that there was not a lot of consensus building, and that they more-or-less just introduced the Bill and ran it through (Telephone Interview, April 2015). These statements help illustrate the instrumental capacity of the majority government itself. The Conservative's instrumental power to push the Bill through with limited compromise is further illustrated by the NDP's failed attempts to pass amendments to the Bill in the hopes of balancing expected benefits. This is illustrated well in the House of Commons Hansard 142, from November 17, 2014, wherein then NDP MP Ruth Ellen Brosseau stated:

> My NDP colleagues and I were there for all of the testimony. We did our homework and we proposed at least 16 amendments to this bill—common-sense amendments that were all rejected, unfortunately. Our party proposed amendments in the interest of a balanced approach between protection for plant breeders and for agricultural producers. Our amendments would have ensured that all participants could benefit fully from these ambitious changes.

Later in this debate, then Liberal MP Mark Eyking stated:

> We should be pushing the government to come forward with better legislation because it would help the small farmers, the new farmers, the young farmers who are just starting up. There is not enough in the bill for them. The government has done a disservice to the parliamentary system by not putting some of our amendments into the bill. This could have been a better bill.

These quotes effectively represent the climate of debate seen through the Bill's movement through Parliament. Amendments proposed by the NDP, as well as the Liberals and Green Party, were consistently voted down.

In addition to the power exercised by the majority Conservative government, the interactions of powerful organizations in support of the Bill also represent an important level of instrumental power. Discussing instrumental power, Clapp and Fuchs (2009) explain that lobbyists are able to directly influence policy formation. Instrumental power is not only expressed by the majority government's representation, but also by the various organizations which supported the Bill—especially considering 13 of the 28 organizations analyzed have active lobbyists petitioning their interests. Table 2 (see Findings) identifies the seed and farm organizations belonging to Partners in Innovation and GrowCanada (who vocally supported the Bill), as well as which organizations were represented by witnesses speaking at the Committee meetings of the House of Commons and Senate, and which of these organizations have active, registered lobbyists in Canada (as of 2014). The instrumental power held by the CPC and supporters of Bill C-18 is clear, which may help to explain the NDP's consistent failure to make amendments to the Bill in hopes of a 'balanced' legislation.

(2) Structural biases in law and policy formation

Research findings from the textual and contextual analysis highlight important structural biases in the development of Bill C-18. Structural power is expressed through the use of time allocation

to limit debate and through the use of an 'omnibus' style bill[57] which includes a significant amount of amendments to several different pieces of legislation. Together, these two measures imposed structural limitations on the extent to which the Bill was debated and studied. These measures involve a "mobilization of bias" wherein "some issues are organized into politics while others are organized out" (Bachrach & Baratz, 1962, p. 949).

The use of time allocation is an important finding regarding the government's ability to structure debate. Particularly, since the use of time allocation motions have been on the rise since the mid-1970s (Plante, 2013). When a time allocation motion was put forward by CPC MP Peter Van Loan for Bill C-18 on November 19, 2014, Peter Julian (NDP MP) responded:

> This is the 82nd time that it has imposed a time allocation motion and closure on a government bill before the House. This sorry record is unprecedented in the history of Canada. We have never seen a government axe debate in the House so quickly before. Only a handful of people get the opportunity to speak to the bills in question. (House of Commons Hansard 144, p. 9547).

In addition to the issue of time allocation, concerns over the omnibus-style construction of Bill C-18 was one of the most commonly coded issues, found peppered throughout every reading and committee meeting in the House of Commons. Réjean Genest (NDP MP) illustrates the concerns over an omnibus bill with the statement:

> Today we are debating yet another omnibus bill, which is nothing new with these Conservatives. They throw all kinds of different things into the same bill. This one has to do with agriculture. (House of Commons, Second Reading, No. 103, p. 6815).

[57] It is worth noting here that the CPC under Stephen Harper has been criticized previously for their use of debate-restricting omnibus bills. Bill C-9 in 2010, and Bill C-38 and Bill C-45 in 2012, are omnibus bills passed by this party—these particular bills faced criticisms for changes to environmental legislation (see Kirchhoff & Tsuji, 2014).

And Carol Hughes, another NDP MP, stated

> The government has introduced yet another omnibus bill and is taking an unbalanced approach. When the government combines an omnibus bill with limited debate, it is easy to lose sight of some very important aspects that will negatively impact farmers and producers as well as the government. (House of Commons, Second Reading, Number 105, p. 6957)

These statements effectively capture the government's use of structural power. Introducing several different changes in a single 'omnibus' bill meant the new Act had to be adopted in its entirety, so if some changes were widely supported and others more contested, MPs are in a position to either make compromises in order to get important changes passed, or take the position of being against the entire bill. As then NDP MP Ruth Ellen Brosseau explained:

> As with all of the government's other omnibus bills, I have a bittersweet relationship with this bill. There are some parts I like and some parts that really concern me. (House of Commons Hansard 142, p. 9377)

And Malcolm Allen (then NDP MP and Critic for Agriculture and Agri-Food) stated:

> Mr. Speaker, the minister has asked why can we not support the bill. If there were individual bills instead of an omnibus bill, we probably would have supported the vast majority of it. During committee stage, quite often there was agreement around certain sections, whether it was the fertilizer piece, or some other pieces. We have problems with one side of it and we do not get to vote on it separately, which I do not think is allowable, so we end up with this. (House of Commons Hansard 142, p. 9372)

While from a Liberal Party perspective, MP Mark Eyking, referring to the compromises that could have been made, stated:

> The Liberal Party is going to vote in favour of this legislation because there is too much good in it for farmers not to have it, but it should have been split off. (House of Commons Hansard 142, p. 9381)

The combination of an omnibus-style bill with a limited debate (through time allocation) work as structural tools that enable the majority government to create unbalanced conditions for debating and developing law and policy. Essentially, the scope of the political process is limited by the reinforcement of particular institutional practices (Bachrach & Baratz, 1962). In addition to the instrumental and structural interactions within debates over Bill C-18, the discursive framing of varying arguments captures another important layer of power imbalance.

(3) Discursive framings of policy positions

Discursive power adds an important component to the analysis, as it pertains to the strategies used to influence others by promoting and justifying certain arguments. Research findings from the textual analysis (including key findings based on coding categories like 'Keeping Pace') as well as the reflexive interpretation of text regarding the need to 'Feed the world' represent key discursive framings of policy positions in Bill C-18 debates.

Discursive framing of GMOs around the moral claims of climate change, food security, and feeding a hungry global population is consistently being done by pro-GM actors (Dibden, Gibbs, & Cocklin, 2013; Sell, 2009). This discursive strategy is also applied in parliamentary debates over Bill C-18, framing the Bill as critical for helping Canada 'keep pace' with other countries and produce enough food to feed a growing population. The discursive power exercised in this context is the attempt to convince other politicians of a pre-existing, common sense solution to certain policy problems (Fuchs *et al.*, 2015). Discursive power draws on the values and norms related to food security to influence the political agenda (Fuchs *et al.*, 2015). The intention is to reshape perceptions regarding these technologies by pairing them with a food

security/climate change discourse. Although it is difficult to specify the degree of impact these discursive strategies make, this sort of framing is an important component of the array of power relations within law and policy development.

Concerning Bill C-18, "Keeping Pace" and "Feed the world" were two themes identified as key discursive frames utilized to advance positions favouring the Bill. Pierre Lemieux (then CPC MP and Parliamentary Secretary to the Minister of Agriculture) effectively demonstrates the discursive frame of "Keeping Pace" with the statement:

> As new agricultural production techniques and new developments in science arrive, the legislative tools for agricultural products must keep pace, especially since other international trading partners have innovated and have modernized their approaches. We need to keep pace with the modern world and help our farmers grow their businesses, and we need to do it now. (House of Commons Hansard 055, p. 3409)

This statement is particularly valuable because Lemieux phrases these changes as pre-determined. The idea being framed is that as a country, Canada "must keep pace" and "do it now", or risk falling behind the rest of the world. Relatedly, the framing of Bill C-18 as necessary to help "Feed the world" in a future with a global population over 9 billion is illustrated by Maxime Bernier (CPC MP), who stated:

> It is not surprising that the overall demand for world-class food produced by our farmers is increasing. The world's population is expected to reach 9.3 billion by 2050. To respond to this increasing demand, we need productive, competent farmers. (House of Commons Hansard 142, p. 9547)

Discursive power is largely about "the potency of the frames that actors use to couch their preferences" (Sell, 2009, p. 188). For this reason, it is important to highlight the goals, values, and assumptions that were utilized to justify and encourage the contents of Bill C-18. If amendments such as Incorporation by Reference and the adoption of UPOV '91 can be coupled

with the need to "keep pace with the modern world", and support increased production growth for a hungry planet in 2050, then actors and organizations may be more inclined to accept changes that may or may not be in their best interests. Discursive power is linked closely with constitutive power, as it deals with the underlying norms and values actors use to make sense of the world—the difference is that constitutive power comprises the background conditions which enable actors to exercise their agency in instrumental, structural, and discursive forms.

(4) Ideologies, norms, and histories as constitutive influences

Drawing largely from the findings of the textual analysis (specifically the significance of the themes 'Standard/not standard' and 'Keeping pace', see Table 1) and the reflexive interpretation of discourse regarding the influences of neoliberalism, this section sheds light on the constitutive power of ideologies, norms, and histories. The fourth dimension of power—referred to constitutive power—seeks to uncover the conditions, norms, values, and histories that influence the actions of individuals and creates the space for individuals to engage in different relations of power. This form of power "consists in the process of subjectification" (Haugaard, 2012, p. 47); that is, "subjects are understood as social constructions, whose formation can be historically described" (Digeser, 1992, p. 980). Parliamentary discourse on Bill C-18 reveals a predominance of codes and coding categories that are situated within three important historical/ideological assumptions: technological progressivism, neoliberalism, and scientific expertise[58]. This section

[58] These three ideological assumptions are borrowed from Kinchy, Kleinman, and Autry (2008); Kleinman and Kloppenburg (1991); and Kleinman and Kinchy (2003)—these works offer important discussions regarding discourse and ideology in the context of biotechnology.

outlines key instances to illustrate these patterns, and considers the types of impacts such guiding histories/ideologies might have on decision-making.

Technological progressivism, according to Kleinman and Kinchy (2003), "has its roots in the Enlightenment"; continual technological innovation and development became normatively embedded. The type of technology discussed in Bill C-18 debates is plant breeding technology, and relates to coding themes such as 'Keeping pace'. Progress as a need is effectively captured by Bev Shipley (CPC MP) in the Bill's Second Reading:

> If Canada's farmers, along with the agriculture and food sector, are to maintain their competitive edge on the global stage, they need 21st century technology. We need to keep pace with the modern world, and we need to help our farmers grow their businesses. (House of Commons Hansard 055, p. 3411)

The value and need for technological progress has been identified as a dominant discourse in GMO policy debates (Kleinman, 2009), and appears to be relevant in the context of Bill C-18 as well. This section seeks to map out instances wherein the ideology of progress (technological and otherwise) is embedded in discourse—particularly when such discourse constitutes the formation of legislation. Analysis reveals discourses representative of technological progressivism commonly occur within discussions of global competition, growth, and investment—themes which signify a devotion to neoliberal values.

Neoliberalism comprises many different aspects. This study focuses on the celebration of private property rights, an emphasis on individual rights and responsibilities, and "shifting and 'rolling back' the state apparatus where it is seen to impinge upon capital investment, commodity production, and market exchange" (Heynen et al., 2007, p. 5). These characteristics of neoliberalism are consistent with the overall tone of Bill C-18—more extensive property rights for plant breeders, further categorization of farmers' and breeders' individual rights and

responsibilities, and a scaling back of regulatory mechanisms thought to limit opportunities for investment and market exchange. The neoliberal tone of Bill supporters is illustrated by Maxime Bernier (CPC MP), who stated:

> The bill provides guarantees for food safety and future markets and, lastly, it ensures that our products will be welcome in other countries without tariff and non-tariff barriers (House of Commons Hansard 142, p. 9372)

Additionally, Pierre Lemieux (then Parliamentary Secretary to the Minister of Agriculture, CPC) contributes to this tone with the statement:

> Adopting UPOV '91 in Bill C-18 would strengthen intellectual property rights for plant breeders and would help increase investment in research and development for Canada's crop sector. (House of Commons Hansard 147, p. 9684)

Phrasing by CPC MPs and supportive witnesses often centred on the importance of growth, investments, competitiveness, new markets, and free trade. Changes are discussed as "new tools" and "better services", creating an "effective, innovative and nimble legislative framework" (House of Commons, Hansard 055, 2014, p. 3396-3397). In line with Kinchy, Kleinman, and Autry's (2008) study, this analysis of Bill C-18 debates identified links between neoliberal ideologies and the support of scientific expertise.

Scientific expertise, in particular contexts, represents the ideological assumptions of *scientism*[59]—"the notion that values should not be allowed to mix with facts, and further, should not be considered in decisions about science and technology" (Kleinman & Kinchy, 2003,

[59] According to Kleinman and Kinchy (2003) "Scientism is rooted in precisely this perception of the separation of science and values, a boundary that was cultivated in the earliest efforts to create science as a profession, but dates back at least to Plato (see Bruce, 1987; Daniels, 1967; Gieryn, 1999; Proctor, 1991)" (p. 379).

p. 379). The aspects of parliamentary discourse which combine the guiding ideologies of neoliberalism and technological progressivism with conventional modern scientific expertise are of particular interest because scientific reasoning becomes enmeshed within these normative/ideological discourses. Scientific expertise is useful for endorsing economic growth and technological innovation. Two excerpts from Gerry Ritz's (then CPC MP and Minister of Agriculture and Agri-Food) introductory speech for the Bill depict this combination of guiding ideologies:

> With the agricultural growth act we would be modernizing Canadian legislation on a foundation of science, technology, innovation, and international standards. (House of Commons Hansard 055, p. 3397)

> Wielding the latest science, tools and practices, Canada's agricultural sector has the potential to grow and prosper in a manner that secures the future of our agricultural industry and benefits all Canadians. (House of Commons Hansard 055, p. 3399)

These statements illustrate the grouping of scientific expertise with the imperative to grow, modernize, and innovate. Coupling technological innovation with the need for the latest science is unsurprising, as the two reinforce one another in important ways. As Kleinman (2009) explains, in disputes over new technologies, typically the only issues considered legitimate are those which can be assessed using scientific methods, such as health and safety. In this way, Bill C-18 is positioned as a way for Canada's technological innovations to be supported by sound science and 'up-to-date' legislation—this effectively combines embedded values regarding technological progress as well as scientific knowledge. It should be noted that, when referring to 'scientific knowledge' and the constitutive power embedded in "science-based" information, it is

a reference to conventional, reductionist forms of science as opposed to more complexity oriented approaches[60].

What is also interesting is that discourse from the other parties (NDP, LIB, and GP) did not directly counter the guiding ideologies/values of neoliberalism, technological progressivism, and scientific expertise, focusing instead on warnings, concerns, and skepticism. Although the NDP highlighted the importance of food sovereignty, and the Green Party took a strong stance against passing the Bill, the values of neoliberalism remained uncontested, and references to technological and scientific progress, competition, and growth, were largely absent in the criticisms of the Bill.

The degree of impact these guiding histories/ideologies have had within Canadian agriculture and agrifood law and policy development in general, or regarding Bill C-18 specifically, is difficult to discern. Sell (2009) suggests equally compelling discursive frames tend to make other forms of power more impactful. When guiding ideological assumptions are left undisputed, the instrumental, structural, and discursive actions of powerful actors (which are, in part, constituted by these assumptions) may become even more impactful. As such, incorporating an evaluation of ideological assumptions within law and policy analysis may be essential—the question, then, is how to grapple with examining and disarming dominant ideological assumptions, some of which date back to the Enlightenment.

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[60] By complexity oriented approaches, I am referring to approaches that move past reductionist science, or the 'modern model' wherein "science informs policy by producing objective, valid and reliable knowledge" (Funtowicz & Strand, 2007, p. 263). Complexity oriented approaches seek to manage uncertainties and account for a diversity of perspectives—such approaches point to important research on science-policy relations that are not explored here.

CONCLUSION

The potential implications of Bill C-18, the *Agricultural Growth Act,* are not yet certain, but it has no doubt pushed Canada even further into directions that prioritize economic liberalization, global competitiveness, and private property rights. As highlighted by the NFU and other opponents to this new law, farmers may see increased costs, further erosion of their rights and control over seeds, and an industry that has moved one step further toward prioritizing the interests of corporations over that of Canadian farmers. As Canada's governing party changed in 2015 from Stephen Harper's Conservative government to a Liberal majority under Justin Trudeau, it is possible that Canada's agricultural laws and policies will change again.

Analysis of debates in the House of Commons, the Senate, and their respective committees, reveals useful details regarding the power relations within parliamentary debates over Bill C-18, as well as insights toward Canadian law and policy development in general. Through an analysis of parliamentary discourse, I have outlined multiple interactions and relations of power impacting the development of, and debate over, this Bill. These include the instrumental capacity of the majority government and corporate actors to produce change, structural biases in developing the Bill and restricting debate, and discursive framings of Bill C-18 as necessary for keeping pace with other countries and helping to feed the world. Furthermore, the constitutive power of norms, histories, and ideological assumptions are represented by a prioritization of technological progressivism, neoliberalism, and scientific expertise. These interconnected interactions and relations work together to produce an imbalanced climate for agriculture and agrifood law and policy development overall. Further

research regarding these varied and complex power relations is necessary for improving equity and accountability within Canada's food system.

CHAPTER 6

Power, discourse, and news media: Examining Canada's GM alfalfa protests

On April 9th, 2013, a coalition of farmers and activists rallied in 38 cities across Canada in the 'Day of Action' against the introduction of genetically modified (GM) alfalfa. These rallies protested potentially adverse impacts to markets, the environment, and society, and were picked up by news media outlets across the county. Despite the protestors' focus on a range of concerns, news outlets tended to emphasize particular issues, such as economic and market impacts while broader social, political, and environmental issues received only peripheral attention. This article contributes to literature on GMO protests and media analyses by offering an explanation for the media's focus on economic over other concerns, and the power relations embedded in this focus. Based on a discourse analysis of 88 news reports on GM alfalfa published over a four year period, this article identifies under-acknowledged power relations that greatly influence the direction of reporting. Specifically, GM alfalfa news coverage is influenced in two key ways: (1) news values and media culture shape the report writing and editing process, privileging 'newsworthy' topics while side-lining others; and (2) neoliberal normative assumptions act as underlying hegemonic discourses that re-embed dominant knowledges; common sense values and assumptions regarding market mechanisms and privatization go unnoticed, or at least uncriticized.

INTRODUCTION

On Tuesday, April 9th, 2013 over 100 people peacefully gathered at the Kitchener-Waterloo Constituency Office of then Member of Parliament Peter Braid to protest the release of genetically modified (GM) alfalfa in Canada.[61] Farmers, families, and students from all over the Waterloo Region joined together to make their concerns over GM alfalfa visible. The Kitchener-Waterloo protests were just one of 38 that took place across the country, with the protesters presenting a united voice against GM alfalfa outside government and corporate offices. These protests are part of an important trend in Canadian GMO[62] activism; previous efforts against GMOs include recombinant bovine growth hormone (rBGH) in the early 1990s and GM wheat in the early 2000s. Research on these past campaigns usefully examines the roles of farmers, consumers, and health organizations in building coalitions to oppose new GM products. However, much less attention has been paid to the role of news media discourse[63] in the context of GMO activism in Canada.

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[61] Personal observation (April 9th, 2013)

[62] GMO is the initialism for "genetically modified organisms", but it should also be noted that GMO is now commonly used as a noun in contexts such as this, where the full spelling of the word is not effective/suitable.

[63] The terms 'discourse(s)' and 'discursive' are used extensively through this article, in reference to news media discourses, discourse analysis, and discursive power. Discourse, for the purposes of this article, refers to the messages, writings and articulations as well as the processes, histories and contexts in which they gain their meanings as representations of social life. As Hall (1997) writes: "Normally, the term 'discourse' is used as a linguistic concept. It simply means passages of connected writing or speech. Michel Foucault, however, gave it a different meaning. What interested him were the rules and practices that produced meaningful statements and regulated discourse in different historical periods. By 'discourse', Foucault meant 'a group of statements which provide a language for talking about – a way of representing the knowledge about – a particular topic at a particular historical moment. ... Discourse is about the production of knowledge through language." (p. 29)

Protests against GM alfalfa successfully attracted the attention of news media outlets across the country. The protests can be considered a success insofar as the event itself was covered extensively by the news media; the content and period of this coverage, however, deserves further examination. Not only does news coverage on GM alfalfa appear sparse before and after the time of the protests, it focused heavily on the potential economic/market impacts of introducing GM alfalfa to the Canadian market. By prioritizing dominant issues like market impacts, the press gave broader social, political, and environmental issues only peripheral attention.

Protestors and protest organizers have an interest in gaining attention from the news media, a key source of widely distributed public information, and an important player in the development of public perspectives regarding genetically modified organisms (GMOs) and other issues in Canada's food system. As Bauer and Gutteling (2006) explain, "the mass media have a limited and varied, but definite impact on public perception of biotechnology" (p. 126). As such, it is important to analyze what forces influence news coverage and content. Such an analysis requires us to step back and consider the sorts of influences that act on and through this medium. Traditional power theories tend to focus on agency; powerful actors actively try to impose their will onto others. In this case news media are not directly involved in disputes over GM alfalfa, so we need to consider other lenses to analyze the power relations in this particular context. Constitutive power offers a means to conceptualize such circumstances, focusing on the historical and cultural development of norms and discourses, as opposed to the immediate power relations of individual actors and/or organizations (see Digeser, 1992). Put differently, constitutive power offers a conceptual workaround for an analysis of news media discourse, particularly because news reports are written by actors (reporters, editors, etc.) who are not

directly involved in GM alfalfa debates, so focusing on the actions/agency of these actors would be largely ineffective. Furthermore, constitutive power offers a tool for understanding the role of news reporters (and editors, copyeditors, etc.) through subjectification; the construction of subjects/individuals influences the way some events are viewed as newsworthy, and others are not (see Haugaard, 2012; Ryan, 2014). This article uses the concept of constitutive power to look beyond the power of actors, focusing instead on the creation of media actors acting out their roles, and the interplay of historically developed norms, values, and discourses that influence, and are influenced by, news report coverage and content.

This chapter provides an examination of Canadian news coverage on GM alfalfa for a period of four years surrounding the April 9th, 2013 "Day of Action to Stop GM Alfalfa". A discourse analysis is performed on 88 individual news reports, and findings result from both qualitative and quantitative approaches. Two distinct features within this coverage are problematized as sites of constitutive power relations. First, news values and media culture shape the report writing and editing process, privileging particular 'newsworthy' events and content. News media discourses tend to be "dominated by certain rhythms and certain forms of speech" (Derrida, 2002, p. 89). As a result, some ideas, voices, and perspectives are highlighted by the news media while others are marginalized. Second, the presence of neoliberal normative assumptions in the news reports analyzed help to re-embed dominant knowledges regarding market mechanisms and private property rights. Neoliberal discourses play an important role in food and agricultural politics (see Andrée, Ballamingie & Sinclair-Waters, 2014; Guthman, 2008) and appear to impact news media coverage on GM alfalfa protests. Importantly, the concept of neoliberalism, as applied in this study, is understood as variable across time and space, embedded in a historical timeline that dates back (at least) to nineteenth century

liberalism, and constituted through place-specific developments and interpretations (see Andrée, 2007; Wolin, 2008; Dean, 2014). The present study can be viewed as taking a pragmatic approach to applying the terms of neoliberalism and neoliberal discourse, using it as a category for effectively capturing the dominant state-economy relationship, ideas and practices currently found in much of the developed world (see Kinchy, 2012).

The lens of constitutive power is necessary for examining how particular norms and discourses are produced, reproduced, and prioritized by the news media, while at the same time considering the ways that certain norms and discourses are forces with their own effects, capable of infiltrating and influencing the news media. This extension of traditional power theories incorporates insights from Foucault and like-minded scholars to capture the interconnected and co-constructed nature of news media discourse. This study is the first examination of GM alfalfa activism in Canada, and highlights important new insights regarding the development of GMO activism in relation to the news media. Additionally, this article shows how a comprehensive examination of GM alfalfa news coverage in the Canadian context is instructive for understanding the effects of constitutive power. This approach to power offers important new insights for studying discourse around GMO activism, including a means for grappling with the effects of underlying normative assumptions.

POWER THEORY AND NEWS MEDIA DISCOURSE

What forces direct the content and extent of news coverage? And, how are norms and discourses articulated in such power relations? Power has been extensively (re)defined, reviewed and categorized (see Lukes, 1986; Clegg, 1989; Haugaard, 2002), and utilized within the analysis of

news media (see Fairclough, 1998; van Dijk, 1995). An effective conceptualization of power is essential for capturing the varied ways in which news media are imbued with influence. To achieve this, the concept of *constitutive power* is utilized, based significantly on Digeser's (1992) "fourth face of power".

As theoretical understandings of power have developed, useful categories for conceptualizing power relations have emerged. Dahl's (1957) conception of power focuses on an actors' capacity to influence actions and/or events through their own actions. This has been termed the first dimension or 'face' of power, and referred to as instrumental power in global governance literature (see Fuchs, 2007; Clapp & Fuchs, 2009). Bachrach and Baratz (1962) extend Dahl's conceptualization to include a second dimension of power, which involves the "mobilization of bias"; actors exert power by "creating or reinforcing social and political values and institutional practices that limit the scope of the political process" (p. 948). Fuchs (2007) discusses this type as a structural approach to power, or structural power. Lukes (1974; 1986) extends the discussion of power by adding a third dimension to explain how subjects being influenced can act voluntarily, as a result of modifications to actors' values and beliefs. This has been discussed as discursive power, which considers the role of media and other public relations mechanisms in framing political issues (Clapp & Fuchs, 2009). These three dimensions of power are useful tools of analysis, and have been effectively applied by Fuchs (2007) and Clapp and Fuchs (2009) to examine business power, particularly in the agri-food sector.

The challenge with applying these approaches to an analysis of news media coverage lies in their focus on agency. These visions of power are well-suited for examining the capacity of actors (such as corporations and farm organizations) to control and/or own news media outlets, as well as expressions of bias (political and otherwise) in the news media. Such investigations

are a matter of discursive power, paying attention to actors' attempts to produce accepted 'truths' about a given debate; such analyses incorporate agency and access to material resources (see Clapp & Fuchs, 2009). Not only are such analyses challenging in terms of feasibility, examining agency within news media discourse will uncover an incomplete picture of power relations. As such, this article looks beyond agency-based approaches to power, which are insufficient for comprehensively analyzing the power dynamics within news reports. Here, a focus on constitutive power enables the examination of historically developed norms, ideas, and values that become embedded in news media coverage.

Power literature outlining what I refer to as *constitutive power*[64] offers a conceptual tool for moving beyond an analytic focus on actors (individuals, businesses, governments, etc.) and their actions. As outlined by Foucault (see 1977; 1978; 1980), Digeser (1992), Haugaard (2002; 2012), Ryan (2014) and others, the addition of constitutive power captures key aspects regarding the underlying historical and normative influences that shape actors' capacities to exert power. Constitutive power diverges significantly from the first three dimensions of power because it focuses on how actors are created ('subjectification') instead of how they act (Haugaard, 2012; Ryan, 2014); in other words, certain normatively and historically perpetuated ideas, practices and values create actors that are influenced by these embedded understandings. This form of power exists outside the actions of agents operating towards their own ends, operating as 'regimes of truth' that privilege certain ideas, and predispose the actions of individuals.

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[64] This term is consistent with the language used to describe this form of power (see Digeser, 1992; Haugaard, 2002), but has also been used in numerous, yet inconsistent, instances. Some authors contribute to constitutive power as possessed and deployed by actors, such as the state (see Browning & Christou, 2010; Neocleous, 1996), while others view it as a process of subjectification and an embedded, underlying influence based on norms and discourses (see Davies, 2002; Ryan, 2014; Rye, 2014; Trowler, 2001). The present study adopts the latter view.

For Dean (2012), common (agency-based) approaches to power imply a 'zero-sum' relationship that focuses on power as a possession—the actions of powerful actors subtract power from others. Constitutive power, conversely, is not possessed but rather forms the discursive and ideological space for exercising power through the historical and cultural development of norms and discourses in which actors participate, negotiate, and interact (Digeser, 1992). In the context of news media discourse, constitutive power appears as the values and ideas that underlie and infiltrate news media content, often in the form of normative assumptions. This article utilizes the concept of constitutive power to examine: (1) how news values and media culture place limitations on what makes something 'newsworthy', and (2) how GM alfalfa news coverage helps to reinforce neoliberal discourses through underlying normative assumptions. Before these research finding are discussed, a review of GMO resistance in the Canadian context is included.

GMO RESISTANCE IN CANADA

Opposition to GM alfalfa is not the first instance of widespread coordinated resistance to the introduction of GMOs in Canada. In 1994, opposition to rBGH—which helps dairy cows produce more milk—came from all across Canada through the efforts of several different organizations, including the Council of Canadians and the National Farmers Union (NFU) (Sharratt, 2001b). By January 1999, it was reported that Health Canada would reject Monsanto's application for rBGH due to concerns over animal health (Sharratt, 2001b). Andrée (2011) points to key factors that helped to make this campaign successful, one in particular being the Dairy

Farmers of Canada's (DFC) vocal opposition to rBGH. Due to its considerable size and influence, the DFC was an essential part of the campaign's overall success.

A similar coalition of farmer, consumer, and health organizations successfully opposed the introduction of GM wheat in Canada in the early 2000s (Eaton, 2009; 2011; 2013). Various organizations such as the Saskatchewan Organic Directorate, Canadian Wheat Board (CWB), National Farmers Union, and Green Peace Canada joined in opposition to Monsanto's GM Roundup Ready® wheat, citing a variety of reasons to oppose the crop (Eaton, 2009; 2013). A key member of this coalition was the CWB, who claimed that 80 percent of their customers had concerns about the introduction of GM wheat (Eaton, 2011). Much like the DFC with rBGH, the CWB's opposition to GM wheat was a powerful force against its introduction (Andrée, 2011). Resistance to both rBGH and GM wheat illustrate the importance of powerful allies in the opposition to GMOs. What is particularly important to this study is how GMO activism involves interplay between actors of varying size and influence, and conflicting ideas and values that can be spun into more common threads. Both of these campaigns highlight the need for further research on GMO protests, coalition formation, and the sorts of ideas, frames, and discourses that develop.

In this article, I approach GMO resistance in Canada from the contexts of news media responses and the role of norms and discourses. For example, Magnan's (2007) study on news media coverage of the opposition to GM wheat outlines how resistance came from an unlikely coalition of actors held together by a collective stance against market risks. Less critical allies that opposed GM wheat, but were not against GMOs outright, relied on arguments tied to market mechanisms and business sensibility, with market risks acting as the coalition's 'lowest common denominator' (Magnan, 2007). Put briefly, there was little common ground regarding the wider,

more systemic criticisms of GM wheat or the overall scientific regulatory system. Instead of focusing on actors' roles and the dynamics of forming coalitions against GM alfalfa, this article provides an examination of how particular norms and discourses have an impact in these protests by being produced, reproduced, and prioritized by the news media. GM alfalfa, being a significant anti-GM campaign in Canada in recent years, provides a valuable case study for examining the translation of GMO resistance in the news media.

GM alfalfa in Canada

Currently grown in the United States, Genuity® Roundup Ready® alfalfa is the variety of GM alfalfa being contested in Canada. This variety was developed by Forage Genetics International (FGI), using technology licensed from Monsanto (see FGI, 2016). A high degree of flexibility and broad-spectrum weed control are said to be the principal benefits of GM alfalfa (Van Deynze et al., 2004, p. 8). In 2005, Health Canada approved the safety assessment on GM alfalfa, and the Canadian Food Inspection Agency approved the livestock feed and environmental safety assessment, deeming it to be as safe as conventional (non-GM) alfalfa (CFIA, 2013). In 2013, the CFIA registered several varieties of GM alfalfa for commercial sale (CFIA, 2013; Environmental Commissioner of Ontario, 2014). The first commercial production of GM alfalfa occurred in the spring of 2016.

GM alfalfa has faced widespread criticism, particularly from organizations like the National Farmers Union (NFU) and the Canadian Biotechnology Action Network (CBAN). Industry researchers and organizations opposing GM alfalfa have been scrutinizing GM alfalfa since (at least) 2012. Although Yungblut and Jalbert (2012) identify benefits of GM alfalfa in terms of effective weed control, they note risks regarding a potential "negative impact on certain

export seed, forage, honey and the entire organic industry" (p. 3). These negative impacts have to do with the risk of contamination; both conventional and organic varieties of non-GM alfalfa are at risk of cross-pollinating with GM varieties. Markets seeking organic and/or non-GM crop varieties may reject contaminated varieties. Proponents of GM alfalfa have pushed for the development of a co-existence strategy to allow the growth of GM and non-GM varieties without contamination (see CSTA, 2013). However, opponents of the technology are adamant about the inevitability of contamination (CBAN, 2013a). According to CBAN (2013a), some of the ways non-GM alfalfa could be contaminated include seed escape (from spillage, cleaning, transport, etc.), pollinator mediated gene flow (by bees), and the establishment of wild and volunteer alfalfa[65]. As GM alfalfa was pushed forward by its proponents, and passed assessments by the Canadian state, the burgeoning opposition came to a head in 2012 and erupted into protests in early 2013.

On October 24th, 2012 the National Farmers Union–Ontario (NFU-O) organized a protest in downtown Kitchener outside the Delta Hotel where the Canadian Seed Trade Association was holding a workshop to develop a coexistence strategy for GM alfalfa (NFU-O, 2012). According to news reports, approximately 100 protesters gathered for the event (Desmond, 2012, October 24; Loney, 2012, October 24). The following year, the NFU-O called on farm organizations in Ontario and across Canada to protest on April 9th, 2013; this culminated in the 'Day of Action to

[65] Bagavathiannan, Gulden, Begg, & Van Acker's (2010) examination of feral alfalfa in roadside habitats in Manitoba, and Bagavathiannan and Van Acker's (2009) discussion of gene flow between GM and non-GM fields adds further scrutiny to the viability of coexistence strategies. Clark (2012) also contributes to the critique of GM alfalfa, outlining a range of unique issues attributed to modifying alfalfa because its growth habit and physiology as a perennial forage crop. For instance, alfalfa is commonly grown in a mixture with other grasses, such as Timothy, for a variety of reasons pertaining to performance and longevity, but GM alfalfa can only be grown as a monoculture since it is modified to be resistant to the herbicide glyphosate—known as Roundup (Clark, 2012).

Stop GM Alfalfa', cooperatively organized by the NFU/NFU-O and CBAN[66]. Protest organizers spread the word through their networks, using media resources such as websites, Facebook pages, and local news outlets.

One of the organizations opposing the introduction of GM alfalfa is Forage Seed Canada, whose opposition is focused almost entirely on economic concerns, such as consumer and marketplace acceptance, liability for market loss, and how GM alfalfa would impact forage seed markets overall (Kerschbaumer, 2015, March 25). Economic impacts were a dominant concern in these protests, focused on the potential loss of conventional and organic markets in the event of a contamination with GM alfalfa. In contrast, the NFU and CBAN have expressed concerns regarding GMOs more broadly, including issues regarding corporate control and farmer sovereignty (see CBAN, 2014; NFU, 2000). Framing the debate in economic terms may provide a common interest amongst GM alfalfa opponents who may not share common views on other matters (for instance, regarding the environment or corporate control). Lisa Mumm—from Mumm's Sprouting Seeds and one of the organizers of the 'Day of Action'—mentioned the importance of conventional farmers' opposition to GM alfalfa, since they do not always oppose GMOs. She mentioned that organic farmers are generally against GMOs because the sector does not permit their use; however, the agri-biotech industry is not really concerned about the opinions of organic farmers because they are not their customers. As conventional farmers are their customers—and there are many more of them—their participation in the opposition to GM alfalfa is significant in this regard (Telephone Interview, May 2015). Economic arguments

[66] CBAN is a Canadian action network which includes the NFU among its 17 members (see cban.ca).

against GMOs offer a widely agreed upon position on which to build coalitions, and has been identified as common ground in other GM debates (see Andrée, 2011; Magnan, 2007).

This process of coalition formation and finding common ground on particular issues involves the framing of issues around values and norms, and involves the production and reproduction of discourse. Instead of focusing on actors forming coalitions and opposing or supporting GM alfalfa, this article provides an examination of how particular norms and discourses are produced, reproduced, and prioritized by the news media. News coverage of these events represents one of the primary ways in which information regarding GM alfalfa is made available to the wider Canadian public. Therefore, the extent to which constitutive forces influence the production and dissemination of particular ideas and values in the news media is a critical site of analysis. Through methods of discourse analysis, new insights can be gained regarding the overall effectiveness of the news media in translating the goals and concerns of anti-GM campaigns.

DATA AND METHODS

A total of 88 online news media reports were compiled for analysis. The unit of analysis was restricted to English language Canadian news coverage on the topic of GM alfalfa for a period of 4 years—two years prior to, and two years following, the April 9th, 2013 "Day of Action to Stop GM Alfalfa" (April 2011 to April 2015). Materials were compiled using Internet search engines (such as Google News and Bing News), individual news websites (such as producer.com for *The Western Producer*), and CBAN's report on the media coverage of the protests (CBAN, 2013b). Both qualitative and quantitative findings were produced from methods of discourse analysis,

which was conducted using a combination of manual coding and automatic coding using the qualitative data analysis software *Atlas.ti*.

The documents were coded and analyzed in an iterative process utilizing insights from sociological discourse analysis (see Ruiz Ruiz 2009) and critical discourse analysis (see Jäger, 2001; Fairclough, 2001; 2013). The framework of analysis used in this study involves a combination of textual analysis, contextual analysis, and reflexive interpretation. First, textual analysis involves looking at the wording, metaphors, and other grammatical elements of a text (Jørgensen & Phillips, 2002). Second, contextual analysis involves outlining the context of the material being analyzed; including considerations of authorship, audience, and dissemination. It is a review of the time and space in which discourses appear and gain their meaning (Ruiz Ruiz, 2009). Third, reflexive interpretation "involves making connections between the discourses analyzed and the social space in which they have emerged" (Ruiz Ruiz, 2009, p. 25). Reviewing the social, cultural and historical context of a particular news media discourse is done at this stage. This phase takes place throughout the phases of textual and contextual analysis—"analysis is conducted in a constant and bidirectional manner among these three levels" (Ruiz Ruiz, 2009, p. 25). Results from this analysis are outlined in the sections below.

NEWS VALUES, MEDIA CULTURE, AND GM ALFALFA

News, according to Hall, Critcher, Jefferson, Clarke, and Roberts (1978), "is the end product of a complex process which begins with a systematic sorting and selecting of events and topics according to a socially constructed set of categories" (p. 51). Themes and patterns found in the news coverage of GM alfalfa allow for a discussion of power relations regarding the influences

of news media discourses; specifically, news values and media culture. The social positions of reporters—as well as editors, copyeditors, sources, and so forth—influence their capacities and performances, and a result, the content of news reports. As Bowers, Meyers, and Babbili (2004, p. 231) explain, "members of an organization or profession become bound to a way of performing their work identity. As workers fulfill their responsibilities, they often unwittingly become the role the institution has set for them." Historically and culturally developed media cultures, including the construction of particular news values, influence the production of subjects (reporters, editors, readers, etc.) which then influences key aspects of the news report writing and editing process. This is an example wherein "individuals are the vehicles of power, not its points of application" (Foucault, 1980, p. 98). That is, constitutive power "consists in the process of subjectification" (Haugaard, 2012, p. 47), conveyed through everyday interactions and "put into operation when we participate in discourse and norms" (Digeser, 1992, p. 982). In this case, constitutive power is present in the ways news media discourse deploys its own effects (these ideas are elaborated in a later section of this chapter). As news media actors play out their social roles, news values and media culture work to normalize particular discourses.

While the idea of 'news values' is an essential factor in what gets covered by the news, there is not a homogenous understanding of newsworthiness across all media outlets. As GM alfalfa was widely reported in local and regional news outlets, attention to a particular geographic area contributed to differences in reporting. A particularly pertinent factor in this analysis is the difference in attention paid to farm and agricultural issues; while this is the entire focus and purpose of agricultural news outlets like *The Western Producer* and *Better Farming*, reporting on these issues is uncommon in mainstream outlets. Canada's "media blind spot" around farm and agricultural issues is pointed to in Pawlick's (2001) review of the worldwide

decline of these types of news reporting. This study illustrates the differential treatment of agriculture/farm topics by agricultural news media (hereafter ag-news) and mainstream news media (hereafter non-ag news).

Three themes were identified as reflecting the influences of news values and media culture. First, news coverage of GM alfalfa is heavily isolated to the 'Day of Action' protests, particularly regarding reports from non-ag news outlets. Isolated coverage of the protests contributed to a media blind spot around everyday agricultural issues and events that are less visible, but significant to the debate. As non-ag Canadian news outlets prioritize the 'newsworthy', the day-to-day efforts of anti-GMO activism go unreported, or at least underreported. Second, the majority of news reports from non-ag news outlets appear polarized and introductory, refraining from more complex, critical, and/or ambiguous discussions. Constraints on the report writing process work to limit storylines on GM alfalfa in Canada. Third, ag-news outlets focused on economic and market based issues, while non-ag news outlets included a range of concerns, including the issue of corporate control. While non-ag news media coverage was comparatively more isolated and simplified, a wider set of issues were discussed than in ag-news reports. These three themes represent everyday conditions of the news media, which deserve further scrutiny regarding the roles news values and media culture can play in the preferential treatment of particular forms of knowledge.

News coverage isolated to the 'Day of Action'

News reports covering GM alfalfa in Canada spiked in April 2013, specifically in reaction to the 'Day of Action' (see Figure 1). Overall, 56 of the 88 news reports analyzed were published

within the month of April 2013, 52 of which focused specifically on the events of the 'Day of Action'. Figure 1 also separates the publication frequencies by 'Agricultural' and 'Non-agricultural' media outlets, which highlights the more isolated response from non-ag news media outlets, such as *CBC News*. While news coverage of the 'Day of Action' spiked for all news outlets in April 2013, the ag-news outlets (such as *The Western Producer*) covered the issues regarding GM alfalfa much more consistently over the 4 year time period. Specifically, 9 of 27 reports on GM alfalfa from ag-news media outlets occurred in April 2013 (33%) compared to 47 of 59 reports from non-ag news media outlets (80%). Additionally, ag-news outlets were more likely to report on GM alfalfa more than once. A total of 39 reports (66%) from non-ag news outlets were these outlets' sole publication on GM alfalfa. Also, two ag-news media outlets reported just once on GM alfalfa.[67]

[67] In total, the 88 news reports came from seven different ag-news media outlets and 50 non-ag news media outlets.

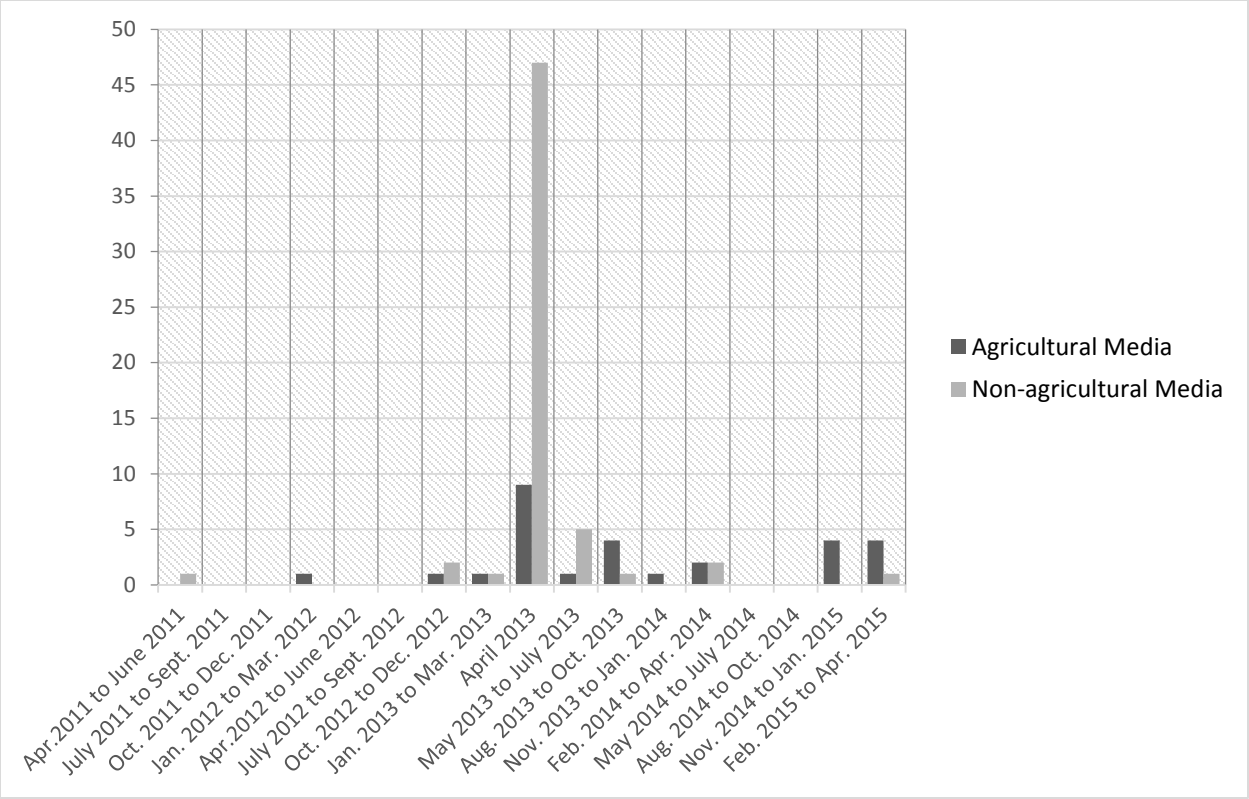

Figure 1: Publication frequency on GM alfalfa for April 2013, and for two years before and after April 2013 (in 3 month intervals); separated by agricultural and non-agricultural media outlets

Further indications that non-ag news outlets responded almost exclusively to dramatic, public events is found in the 2012 news coverage of GM alfalfa; in this year four news reports were identified, two from ag-news outlets and two from non-ag news outlets. The two non-ag news reports are from *Global News* and the *Waterloo Region Record*—both of which reported on the October 24, 2012 protests in Kitchener, Ontario regarding the development of a co-existence strategy for GM and non-GM alfalfa (Loney, 2012; Desmond, 2012). Neither of the two ag-news reports (from the *Western Producer* and *AGCanada.com*) focused on these protests. One report from February 2012 discussed the anticipated report from the Canadian Forage and Grasslands Association regarding the potential impact of Roundup Ready alfalfa on Canada's forage industry (MacArthur, 2012). The other report, from October 2012, reviewed the concerns of the

Western alfalfa seed industry in response to the coexistence workshop hosted by the Canadian Seed Trade Association—the same workshop that was protested (Dawson, 2012).

Any given news media outlet has a choice as to whether or not to cover a given topic, and reporters (along with associated editors, copyeditors, etc.) control the content being published. Editors play a key power role in the editing/focusing of news reports in a particular direction (see Bell, 1991; Devereux, 2007). As Carvalho (2007) describes it,

> Operations of codification of the issue into media discourse are directed by the perceived interest and social impact of a topic, as well as other "news values," economic considerations and editorial lines. Particular values and worldviews are produced, reproduced and transformed in media discourses; others are excluded from them. (p. 223)

In this sense, the values and culture of news media work to privilege particular forms or patterns of knowledge and 'truth', particular discourses. Thus, not every event and issue is reported on; "the media tend to emphasize dramatic and exceptional aspects such as errors, accidents, expert disagreements and conflicts" (Bauer & Gutteling, 2006, p. 114). As such, the isolated news coverage on behalf of the non-ag news outlets can be explained (at least in part) by the spectacle of the protests—that is, the visibility and perceived newsworthiness of the 'Day of Action' by news media actors.

News reports appear polarized and introductory

Each news report is only capable of capturing the perspectives and positions of a limited number of actors and ideas, and must do so in a clear and engaging manner. As Bell (1991, p. 79) explains, "cutting and clarifying can in fact be regarded as a means to the end of newsworthiness. If a story is confused or inexplicit, if it is longer than its content warrants, then it loses news

value." Put briefly, restrictions placed on news reports may help to explain why debates over GM alfalfa appeared to be polarized and introductory as opposed to more nuanced. Furthermore, as news is distributed through a range of media, useful parallels can be made to Mander's (1978) critique of television and its innate predisposition towards confining human experience, knowledge, and perceptions of reality. News media (print, digital print, radio, or television) may be permanently and inherently embedded in a system of insular reporting based on the underlying technological function and capacity of news reports—news is a widely distributed and 'consumed' product that depends on mass appeal, renewed interest, and the financial support built through advertising. Further still, news media can contribute to a simplifying of messages, as Mander (1978) suggests, "nuance is being sacrificed to the larger and more visible elements of stories, and the cause of the sacrifice is a technical limitation of the medium" (p. 273). Such embedded characteristics of news media interact in important ways with the public distribution of knowledge regarding the scientific, technological, and economic aspects of agricultural biotechnology. These characteristics are examined further in the final section on constitutive power.

If considered on an individual basis, reports on GM alfalfa offer limited and polarized descriptions of the positions and roles of the wide range of organizations involved. The complex positions and varied (and even contradictory) goals and perspectives of the organizations involved are not captured in these brief accounts of GM alfalfa. The news reports analyzed depict a polarized debate between two camps, those 'For' and 'Against' GM alfalfa. This debate is described as a contest between the protestors (CBAN and the NFU) and the developers (FGI and Monsanto Canada). This polarized depiction is evident in the dramatic and generalized language of several headlines, such as:

> Anti-GM alfalfa rallies planned (Heppner, 2013, April 8)
>
> Groups riled over GM alfalfa plan (Glen, 2013, April 18)
>
> GMO-alfalfa protest united farmers and consumers (Mann, 2013, April 10)
>
> Alfalfa a key battleground in organic farming war (Waldie, 2011, April 21)

Far from being a 'battleground', there is more than one position 'for' and one 'against' GM alfalfa that should be accounted for; each organization plays a particular role based on their position, goals, history, etc. For example, the Canadian Seed Trade Association is frequently cited in support of GM alfalfa, lobbying on behalf of FGI and Monsanto (see Gillis, 2014, February 9) while organizations like the Canadian Forage and Grassland Association represent a middle ground position, contributing to both the supportive and critical discourse on GM alfalfa (Yungblut & Jalbert, 2012).

The relationship between organizations in opposition to GM alfalfa is convoluted as well. CBAN and NFU/NFU-O are depicted as GM alfalfa's main opponents in the news reports, and appear to represent a broad and inclusive stance. Forage Seed Canada (FSC) represents a key ally in this opposition (referred to in several news reports); however, their position clearly hinges on the potential market-based, economic impacts of introducing GM alfalfa into Canada (see Dawson, 2015, April 9; Kerschbaumer, 2015, March 25). In this sense, while the FSC is an ally in this circumstance, their position is embedded in a market-focused neoliberal perspective, and their support for the campaign will dissolve if it can be assured that market mechanisms will be unaffected. FSC stated they would not endorse GM alfalfa until several conditions were met, including consumer acceptance and an economic impact assessment (Kerschbaumer, 2015, March 25). Other organizations, such as the Canadian Federation of University Women

Stratford, appear only once regarding their involvement in the 'Day of Action' protests (see Cudworth, 2013, April 9). While each news report tended to focus on the primary proponents (FGI and Monsanto) and opponents (CBAN and the NFU) of GM alfalfa (and only one or two other organizations), broader perspectives of the coalitions, power relations, and varying positions involved in this debate are not sufficiently captured within individual news reports, making this knowledge less accessible to the general public.

News reports also appear to be limited to introductory, as opposed to more in-depth and incisive, discussions. This is a common, even necessary, characteristic as news reports are structured to be simple—or at least clear, explicit, and unambiguous (Bell, 1991). This notion of simplicity transfers to television as well (Mander, 1978). The point is that news values and media culture imply and instill a certain level of simplicity. Brief news reports, with limited word counts, unavoidably include basic introductory and explanatory statements; basic constraints prevent more nuanced perspectives and storylines from entering public discourse. This is illustrated by the consistent inclusion of basic definitions regarding what alfalfa is, and what it is commonly used for. A total of 22 different news reports included such explanations, all of which are from non-ag news media outlets such as *CBC News* and the *Globe and Mail*. Two quotes from the reports provide fitting examples:

> Alfalfa is used as a feed, break crop, weed competitor, and a foundation species. Organic farmers rely on it heavily to combat and crowd out weeds. (Sjoberg, 2013, April 19)

> Alfalfa, commonly harvested as hay, is a high-protein feed for dairy cows, beef cattle, sheep, poultry and pigs. It's also used to build nutrients and organic matter in soil. (Enns, 2013, April 10)

These two excerpts illustrate the perceived need (by the news media) to limit the discussion of alfalfa to the introductory. The frequent inclusion of segments which define alfalfa suggests the

general public's knowledge regarding alfalfa is assumed to be limited, likely because it is not a common consumer good (except as alfalfa sprouts), and is most typically used as animal feed. Whether or not it is the intention of a particular news outlet or reporter, covering the topic of GM alfalfa in a brief, polarized, and introductory manner effectively narrows the publicly available knowledge on the topic (at least in this medium). The resulting storyline fails to capture the timeline of this ongoing dispute, the nuances of the varying arguments involved, or the array of implications for Canadian farmers.

Ag-news outlets focused on economic concerns

A key component in the news reports analyzed is the range of potential impacts GM alfalfa may have in the event that it becomes fully commercialized in Canada. Figure 2 (see below) illustrates the seven different concerns about GM alfalfa identified in the news reports; the total number of reports citing a given concern were tracked, and also divided by ag-news reports ('Ag-Media') and non-ag news reports ('Non-Ag Media').

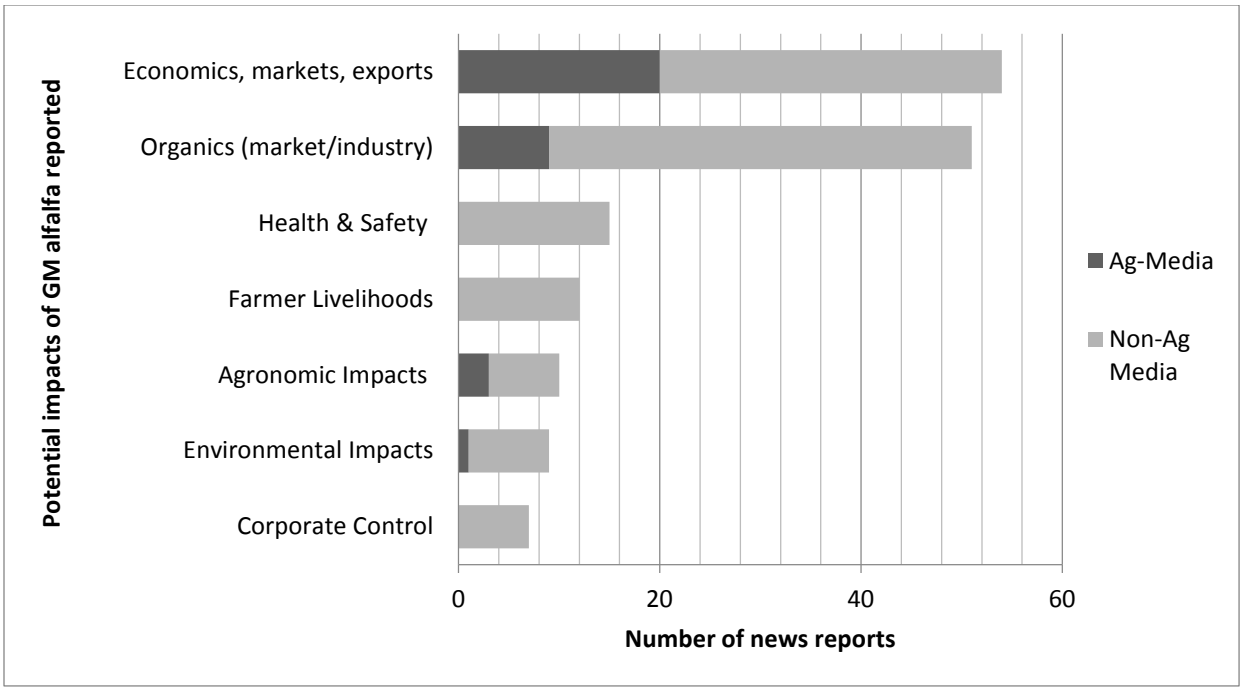

Figure 2: Key concerns regarding the introduction of GM alfalfa into Canada

The potential economic impact on Canadian export markets (particularly in China, Japan, and the European Union) is the most dominant concern reported (in 54 news reports). Loss of organic alfalfa markets is cited nearly as frequent (in 51 news reports). These are concerns regarding the risk that GM alfalfa will contaminate conventional and organic alfalfa, and eliminate markets with zero-tolerance rules on GM content; these two concerns far outweighed the other concerns identified. Concerns regarding health and safety, farmer livelihoods, agronomic impacts, and environmental impacts are each found in 15 or fewer news reports. The potential for increased corporate control over alfalfa (and the food system in general) is the least reported concern, identified in seven news reports. In short, only a handful of news reports identified broader agendas regarding social, political, and environmental impacts. As a result, only a fraction of the issues protestors sought to call attention to were picked up by the news media. Also, non-ag news media outlets were much more likely than ag-news outlets to report on

these broader agendas. More specifically, there was no mention of concerns regarding potential impacts to health and safety, farmer livelihoods, or corporate control in the ag-news media reports. These differences help to illustrate the changing role of news values and media culture based on factors like target audience. Readers of ag-media reports from the *Western Producer* for example are potentially more interested in market impacts than the debates over social, ecological, and ethical issues. While for non-ag media outlets these issues could be considered newsworthy aspects of the story that will resonate with their average readers. The overall concentration on market dynamics among all the news reports analyzed, as well as the even more focused coverage of ag-news outlets, pointed to the importance of exploring the potential effects of neoliberalism within news media discourse.

NEOLIBERALISM AS EMBEDDED HEGEMONIC DISCOURSE

Foucault (2003) writes, "discourse is, with respect to the relation of forces, not merely a surface of inscription, but something that brings about effects" (p. xx). Analysis of Canadian news media reports on GM alfalfa reveals important findings wherein dominant normative discourses appear to infiltrate and influence news content—these dominant discourses reflect a neoliberal rationality. Building on the previous discussion of power theory, news reports are reviewed for their ability to reveal embedded ideas and priorities that can be situated within a larger political economic context. Neoliberal discourse is examined for its privileging of particular policies, ideas, and knowledges (such as privatization) as desirable and self-evident (see Laffey & Weldes, 2005). Constitutive forces of neoliberalism infiltrate news media discourse on GM

alfalfa, thereby limiting the discussion of wider social and political concerns, such as increased corporate control and potential long-term effects to the natural environment.

While varying definitions have been put forward, for the purposes of this article, neoliberalism is understood as

> a governmental rationality that shapes conduct by re-positioning and deploying the values and norms of the market as the principal means by which people measure themselves and others. That is, neoliberalism entails a cultural reform, where economic liberalization, privatization, and market mechanisms become key instruments that privilege and oblige particular conceptions of knowledge, capacities and actions for social transformation. (Ilcan & Phillips, 2010, p. 847)

Identifying normative assumptions which reflect such governmental rationalities is an important factor in this analysis. According to Harvey (2007), "neoliberalism has become a hegemonic discourse with pervasive effects on ways of thought and political economic practices to the point where it is now part of the common sense way we interpret, live in, and understand the world" (p. 22). Understanding neoliberalism 'as discourse' helps to illustrate its constitutive nature, and the way neoliberal discourse is both productive and disciplining, enabling some actors, arguments, and ideas while constraining others (see Springer, 2012). The re-envisioning of public assets as the commodities of private enterprises is an important example (see Harvey, 2007); the privatization of plant breeding in much of the developed world being a prominent example for neoliberal influences on agricultural biotechnology. The pervasive and axiomatic aspects of neoliberal discourses are evident in the news reports analyzed—the prioritization of market mechanisms and privatization provide fitting examples. These two examples of embedded neoliberal discourse, including their impacts on GM alfalfa news content, are each discussed in turn.

‘Let the market decide’: The prioritization of market mechanisms

A clear devotion to economic liberalization and a ‘let the market decide’ mentality was identified in the news media segments that covered the pro-GM alfalfa arguments. This is evidenced in quotes such as this, from the then president of the Manitoba Beef Producers: “Non-science issues, like foreign market access or public acceptance, should be left to the industry and market to address” (‘Critics turn up heat on genetically-modified alfalfa’, 2013). However, the pervasive and embedded effects of neoliberal discourse is illustrated further by the logic of the core argument against GM alfalfa—the contamination of non-GM and organic varieties of alfalfa. The underlying logic of these critiques against GM alfalfa actually conform, at least partially, to a neoliberal paradigm. Although critics of GM alfalfa are evidently in favour of government intervention (which is essentially counter to neoliberalism) to prevent contamination, such interventions are largely advocated for the purpose of maintaining a system of political economic practices that reflect a neoliberal ideology—strong private property rights, market liberalization, and so on. Without establishing a clear opposition to the norms and values of neoliberalism and the prioritization of market mechanisms, various discourses such as the opposition to increased corporate control in the food system become side-lined. As Kinchy (2012) explains, neoliberal reforms in agriculture (as well as scientization) work to “constrain public debate about the social implications of agricultural biotechnology” (p. 47). Instead, a more appropriate policy response to biotechnology, and its uncertain impacts, is what Stirling (2008) refers to as ‘opening up’—an approach to policy discourses which privilege the empowering of human agency in decision-making over technological progress.

While the proponents of GM alfalfa, such as the Canadian Seed Trade Association, advanced arguments couched in neoliberalism, those opposing GM alfalfa appear to be situating their arguments within the same line of reasoning. Two quotes from Radojkovic's (2014, April 2) report effectively illustrate this context:

> The Canadian Seed Trade Association, a seed organization which has been pushing for GM alfalfa seed, has claimed that it would be up to farmers to be able to choose themselves whether to grow the GM alfalfa or not, and that it would be possible for what they call "co-existence."

Those organizations supporting the release of GM alfalfa, like the CSTA, believe co-existence strategies that keep GM and non-GM varieties separate will allow market mechanisms like farmer demand to dictate the fate of GM alfalfa. The report goes on to state:

> However, opponents have stated that they don't believe this is possible and that contamination between GM alfalfa and conventional alfalfa would be inevitable. This is especially a concern for areas where farmers are selling their crops to European markets, who often don't allow GM contamination.

Opponents of GM alfalfa argue the co-existence strategies being put forward are impractical, and a key concern regarding contamination is the reaction of the European market. In this quote, protestors are not challenging the primacy of market forces; instead, contamination is articulated as a disruption to market mechanisms. If contamination occurs, Canadian non-GM and organic varieties of alfalfa will be blocked from several export markets.

The overarching debate on GM alfalfa is about the risk of contamination, and the potential market impacts should contamination occur. Many reports discuss the potential loss of export markets from GM contamination (see Dawson, 2015; Heppner, 2013). Lance's (2013) report describes the U.S. government's hands off approach in leaving it "up to the marketplace to sort out the cross-contamination issue" and how it is likely Canada will take the same approach.

Supporters are demanding the market should decide the fate of GM alfalfa, and opponents insist the release of GM alfalfa will result in unfair market distortions due to contamination. Thus, the whole of this debate arguably takes place on two sides of the same neoliberal coin.

News reports are written in a language which accepts market mechanisms as a given, leaving little room for wider debates. As Harvey (2007) points out, "the idea that the market is about fair competition is increasingly negated by the facts of extraordinary monopoly, centralization, and internationalization on the part of corporate and financial powers" (p. 42). For instance, McAfee (2003) explains that according to the neoliberal approach to biotechnology regulation, "policies that take account of other factors—a desire for national food self-reliance and maintenance of a domestic agricultural sector, or cultural autonomy and conservation of 'traditional' practices—will only introduce market distortions and permit or prolong inefficiencies" (p. 214). The dominant coverage of economic/market based concerns works to re-embed these priorities.

Private property rights as axiomatic

A key feature of the neoliberal project has been "the corporatization, commodification, and privatization of hitherto public assets" (Harvey, 2007, p. 35). Privatization represents another aspect of neoliberalism identified in the news reports analyzed. Private property is a pervasive concept throughout any discourse on GMOs, as the ownership and privatization of seeds has become a dominant characteristic of global agriculture. Many reports include statements that imply an understanding of plant varieties, in this case GM alfalfa, as subject to the rights and

privileges of private property. Hinks' (2013, April 9) report provides an example of how the concept of ownership passively appears in the news media analyzed:

> GM alfalfa was first authorized in Canada in 2005. The authorization did not include registration. The owner of the GM alfalfa variety, Forage Genetics International (FGI), has just recently applied for registration. (Paragraph 4).

References to rights regarding ownership of private property are present as well. MacArthur's (2012, February 17) report in *The Western Producer* includes the statement:

> Forage Genetics International sells the seed in the United States and has the right to sell it on behalf of Monsanto Canada. (para. 6)

Discussions of private property appear naturally in these news reports; the idea that GM alfalfa is privately owned is never critically explored. The global standardization of private property rights to GM products is part of an overall neoliberal paradigm, which reduces genetic material and GMOs to own-able, tradable commodities (McAfee, 2003). Importantly, privatization has become normalized in modern society, and represents a key component in the reduction of state intervention through complementary increases in corporate power (Wolin, 2008). It is in this sense that private property rights are valued for particular purposes, and not necessarily respected in all circumstances. According to Harvey (2007), the neoliberal paradigm leads to bio-piracy, increased corporate power, and "the escalating depletion of the global environmental commons (land, air, water) and proliferating habitat degradations" (p. 35). Comparatively, the established system of private plant breeding affords Monsanto and FGI the right to develop, own, and sell GM alfalfa, while the risk of contaminating organic alfalfa is framed as a co-existence problem instead of a destruction of that organic farmer's property. The uncritical, common place discussions of private property rights in the news reports analyzed works to reinforce (whether intentionally or not) neoliberal discourses that endorse such values.

A key point here is the normalized discourse of seed varieties as property, valued and protected as a corporate commodity. This circumstance, along with the prioritization of market mechanisms, illustrates the ways in which neoliberal ideas, values, and discourses infiltrate the everyday language of news reports. The concept of constitutive power is useful for unearthing the historical and normative power relations that enable everyday practices, ideas, and discourse to have an effect on the knowledge available to the public on a given topic.

THE CONSTITUTIVE POWER OF NEWS MEDIA AND NEOLIBERAL DISCOURSE

News values and media culture direct the actions of reporters, editors, and copyeditors as they perform their roles. These values act as constitutive power mechanisms, which "define and delimit fields of action" through the boundaries created by norms, rules, procedures, etc. (Hayward, 2000, p. 5). Highlighting the ways in which reports are polarized and introductory helps to illustrate the ways news values and media culture effectively delimit news media discourse, thereby influencing publicly available content on the subject. In this case, constitutive power works through the "highly disciplined socialization" of actors who respond in predictable patterns based upon their socialization (see Haugaard, 2012, p. 49). Reporters, editors, and copyeditors privilege (at times inadvertently) the dissemination of particular topics (and viewpoints) by prioritizing significant, 'newsworthy' events. This effectively dictates when and how issues like GM alfalfa make the news, and as a result, less visible and/or dramatic events, such as petitions and letter writing campaigns, receive less news coverage. The established norms and values of news media failed to provide lasting, comprehensive coverage of the ongoing debates over GM alfalfa.

Overall, the point to be made here is that news values and media culture—through the reinforcement of particular norms, rules, and procedures that are designed to maximize the consumption of news—normalizes a particular treatment of information. That is, news media discourse effectively privilege certain forms of knowledge while disregarding and/or deprioritizing others. Holtslander's (2013) article in *The Briar Patch* includes several examples of key topics given little to no attention by the news media. For instance, she discusses whether the Canadian Seed Trade Association's (CSTA) coexistence strategy is inherently biased and designed to deflect opposition, and describes Canada's regulatory system as operating without mechanisms for evaluating market impacts or considering public and farmer concerns in decision-making regarding GM crops. These topics are not covered in the news reports. Analysis of GM alfalfa news coverage has also revealed that other topics such as the potential implications regarding increased privatization and corporate ownership of seeds and the international marketization of GM crops also do not appear in news reports.

In this manner constitutive power influences news coverage and content; news media discourses contribute to the 'subjectification' (i.e. the formation of subjects, see Rabinow, 1984) of news media actors who reproduce and reinforce particular values and norms. As Ryan (2014) explains it, "the subject is formed through relational practices and technologies which are constituted by regimes of truth" (p. 378). Power, in such cases, "passes through the individuals it has constituted", that is to say individuals "are never the inert or consenting targets of power; they are always its relays" (Foucault, 2003, p. 29). News values and media culture, through the 'vehicles' of reporters, editors, copyeditors and so forth, exert influence over the content of news reports. In this sense, news media discourse exerts a form of power by privileging certain knowledge and ideas. Importantly, much of the knowledge and ideas being privilege by news

media conforms to common understandings of news values and newsworthiness. One such news value is *consonance* (Bell, 1991), which is relevant to the following discussion of neoliberalism. News reporters are more likely to cover stories in ways that are compatible with the preconceptions people already have about social groups and contexts (Bell, 1991). This helps to explain the identification of embedded neoliberal discourse within the news reports on GM alfalfa.

Further insights regarding the prevalence of neoliberal discourses are gained by relating them to the concept of constitutive power. For Digeser (1992), constitutive power involves "deeper values and norms serving as background conditions," which affect our day-to-day activities. In terms of the reports on GM alfalfa, the prioritization of market mechanisms and private property rights are dominant, normalized ideas and values developed through the historical, political, and cultural emergence of neoliberalism. Neoliberal rationality (and the prioritization of economic and technological growth more broadly) has far-reaching effects on how issues in Canadian farming are understood. If a person's social consciousness and general understandings of the social world can be viewed as "social constructions, whose formation can be historically described" (Digeser, 1992, p. 980), then we can imagine the formation of neoliberal-minded individuals who fail to critically engage with the implications of economic liberalization and privatization. Viewing neoliberalism as a hegemonic discourse that "is now part of the commonsense way we interpret, live in, and understand the world" (Harvey, 2007, p. 22), the processes of news reporting can be understood as intertwined in this conceptualization, treating ideas embedded in neoliberal understandings of political economy as the way to frame a news story within the values of unambiguity and consonance (see Bell, 1991). Neoliberal values

appear in media text as what Andrée (2007) calls ‘normalizing discourses’; particular normative assumptions are universalized and get articulated as common-sense in the news media.

The constitutive power of neoliberal discourses limits the discussion of wider social and political concerns, such as increased corporate control as well as the potential long-term effects GM alfalfa may have on communities, human and animal health, and natural environments. Furthermore, as Trowler (2001) explains, the “constitutive power of discourse is strong largely because of its ‘invisible’, taken-for-granted nature” (p. 197). The way in which certain discourses become normalized allows for its uninterrupted and unnoticed use within everyday language. By focusing on market mechanisms both sides of the debate become overly focused on the potential impacts to the market—be it for organic, conventional, or GM alfalfa. As market-based discussions receive the majority of news media attention, other key concerns from protestors that are outside a neoliberal rationality seem to get overshadowed. The side-lined issues that deserve further media attention include: the implementation of mandatory labelling for products with GMO ingredients, the ecological impacts of increased pesticide use, and the power and control tied to corporations producing the seeds and chemicals for GM crops protected by increasingly stronger intellectual property rights. Axiomatic understandings of private property and market dynamics work to normalize neoliberal rationalities, hampering strategies that pursue something different— Open Source Seed Initiatives being an example (see Kloppenburg, 2014).

CONCLUSION

An analysis of Canadian news coverage on GM alfalfa reveals how social structures, contexts, and values infiltrate and influence the direction of reporting. This direction prioritizes dominant

issues such as market impacts, while broader social, political, and environmental issues receive peripheral attention. The arguments and findings set forth in this article provide the first detailed account of GM alfalfa debates in Canada, and contribute to a fuller understanding of how constitutive power is articulated within news media discourse.

Although the coalition of protestors opposing GM alfalfa successfully created a newsworthy event, and contributed to its initially forestalled introduction in Canada[68], the overall messages disseminated through this news coverage lacked an incisive criticism of Canada's overall system of GMO regulation and assessment. The scaled-back news coverage of GM alfalfa provides an interesting comparison to Magnan's (2007) account of the opposition to GM wheat. The coalition blocking the introduction of GM wheat agreed to more narrow objectives in order to formulate a common frame, sidelining a more comprehensive critique of GMOs, and the powerful agro-food system in which they are entrenched (Magnan, 2007).

Attention to constitutive power relations enabled the examination of patterns of influence and underlying assumptions, which reveal forces outside the actions and intentions of individual actors. Varying power relations embedded in the production of news reports, such as the 'news values' guiding editors and reporters (and many other media actors), contributes to a polarized and introductory coverage of GM alfalfa debates. Furthermore, the underlying influences of neoliberal discourses are a key factor in this coverage, identifiable in taken-for-granted assumptions regarding privatization and the prioritization of market mechanisms, which passively appear in news media text. Future research, as well as future activism, could benefit

[68] The current state of GM alfalfa production remains unclear. Most recently, GM alfalfa has been sold for commercial use in Eastern Canada. Less than 5,000 acres of hay are expected for the 2016 season (NFU-O, 2016).

from critical assessments of constitutive power relations that influence news coverage, and in effect, the forms of information available to the public.

CHAPTER 7

CONCLUSION

SUMMARY OF FINDINGS

An overall purpose of this research project is to unearth relevant and nuanced power relationships within a range of discourses regarding Canadian agriculture and agrifood policy, with particular attention paid to social movement discourses opposing the introduction of GMOs and their associated systems of seed and food production. Valuable research findings were established in each of the three case studies, and contributions to knowledge are developed through an interdisciplinary approach. A range of disciplines informed the research and writing processes, including sociology, environmental studies, science and technology studies, and political science. Also, the deployment of discourse analysis and a four-dimensional power frame revealed valuable and unique insights regarding the pairing of theory and method.

In Chapter 4, "Power and discourse in GMO debates: An analysis of agri-biotech publicity and campaign materials in Canada", the state of agri-biotech discourse in Canada is examined. Analysis of pro-biotech publicity materials from the CBI and anti-biotech materials from CBAN reveals important power relations regarding efforts to inform public opinion. In this chapter, power relations are explored in two arguments: (1) the Canadian state's endorsement of agricultural biotechnology helps to shore up pro-biotech publicity materials, while placing

limitations on anti-biotech campaigns, and (2) the potency of pro-biotech frames are boosted by their attachment to popular values and pre-established normative understandings of "truth" production which increase their resonance, while limiting openings for and undermining the credibility of anti-biotech campaign arguments. This chapter offers a deeper discussion of agri-biotech publicity and campaign materials, illustrating the ways power and discourse are co-constituted, and the need to re-imagine anti-biotech campaigns to engage with these issues on a deeper level.

Chapter 5, "Debating Bill C-18: An analysis of power and discourse in parliamentary proceedings on Canada's *Agricultural Growth Act*", comprises an analysis of debates in the House of Commons, the Senate, and their respective committees. This case study examines the power relations within debates over Bill C-18, and useful findings are revealed through each of the four dimensions of power examined. Instrumental power is identified in the capacity of the majority government and corporate actors to produce change. Structural power is discussed regarding biases in developing the Bill and restricting debate, including the use of 'omnibus' style legislation to limit the detailed and isolated examination of key amendments. Discursive power helps to understand the framings of Bill C-18 as necessary for keeping pace with other countries and helping to 'feed the world'. Lastly, the constitutive power of norms, histories, and ideological assumptions is represented by a prioritization of technological progressivism, neoliberalism, and modern scientific expertise. These power relations work together in an intricately cooperative and interactive manner to produce an imbalanced climate for agriculture and agrifood law and policy development in Canada. This chapter provides useful insights for examining parliamentary discourse in general, and Canadian agri-biotech debates more specifically.

In Chapter 6, “Power, discourse, and news media: Examining Canada’s GM alfalfa protests” Canadian news coverage on GM alfalfa is analyzed to reveal what sorts of social structures, contexts, and values infiltrate and influence the direction of reporting. The arguments and findings set forth in this chapter provide the first detailed account of GM alfalfa debates in Canada, and contribute to a more complete understanding of constitutive power, and how it can be articulated within news media discourse. This focus enabled the examination of patterns of influence and underlying assumptions that exposed forces outside the actions and intentions of individual actors. Power relations embedded in the production of news reports, such as the news values guiding editors and reporters, contribute to a polarized and introductory coverage of GM alfalfa debates. Additionally, underlying influences of neoliberalism are a key factor in this coverage, detected in taken-for-granted assumptions regarding economic liberalization and privatization which passively appear in news media text. Overall, news reports were revealed as prioritizing dominant issues like market impacts, while broader social, political, and environmental issues receive peripheral attention.

These cases explored novel empirical issues across three unique sites, and contribute to interdisciplinary research in the area of agriculture and agrifood policy. This thesis is necessarily interdisciplinary because of the range of issues explored and the varied approaches from which they were analysed. Overall, this project draws on and speaks to a range of disciplines including sociology, environmental studies, science and technology studies, and political science. Sociological perspectives were essential for understanding the complex dynamics of coalition building and social movements, and also influenced the study’s theoretical approach to power. Environment studies provided necessary breadth to this study’s approach to GMOs, ensuring the social, economic, and political debates over GMOs did not overshadow the important

connections these technologies have to debates on ecological sustainability. Science and technology studies were important for positioning this project as a critical study of society's interactions and understandings of scientific developments. Finally, political science informed this research through empirical literature on governmental/political activities related to agriculture and GMOs, as well as theoretical literature on political power.

STUDY LIMITATIONS

Overall, this study successfully contributed to the knowledge and understanding of contemporary issues in Canadian agriculture and agrifood; in particular, this research points to imbalanced power relations within agri-biotech discourse. Further developments, however, may have been produced with a more significant foundation of previous research, as well as a longer, more extensive study.

Although literature on power provides this study a strong theoretical footing (see Clapp & Fuchs, 2009; Digeser, 1992; Haugaard, 2002; Lukes, 1974), previous research on agri-biotech discourse in Canada is limited. Magnan (2006; 2007) and Eaton (2011; 2013) provide valuable studies on the Canadian agri-biotech sector, focused mainly on GM wheat and coalition building. Andrée (2002; 2005) provides contributions to this body of literature more generally, focusing strongly on international issues. A more extensive foundation of academic literature on GMO discourses in Canada, including focused discourse analyses, may have provided this study with important insights that would have guided this project in other directions, or toward further findings and contributions.

Time is always a factor to consider in research. This project was consciously limited to a manageable set of case studies, and would have benefited from a more elaborate, long-term study. Further insights could be gained, for example, by following up with the passing of Bill C-18 to review the impacts from the amendments of the *Agricultural Growth Act*. While such an undertaking would require more time and resources, the present study has reached important conclusions and laid useful groundwork for pursuing these types of follow up research projects in the future, with new research questions.

FINAL THOUGHTS

This research project adds to our knowledge and understanding of power relations embedded in discourses on Canadian agriculture and agrifood, and offers novel ideas for opening up debates over GMOs and the importance of influencing public perceptions and policy development in an inclusive and holistic manner. The concept of 'opening up' is adopted from Stirling (2008) to highlight the importance of an open, diverse, and reflexive approach to the ways GMOs (and other agricultural technologies) are evaluated and deliberated. Instead of 'closing down' discussions to a limited number of actors and ideas, keeping the dialogue open allows for more inclusive, transparent, and democratically legitimate decision-making processes (see Stirling, 2008). Such an open dialogue is necessary to account for diverse perspectives, knowledges, histories, and ideas.

The persistent and influential role of history revealed itself throughout this study, offering important lessons for understanding the overarching contexts of agri-biotech disputes. According to Kloppenburg (1990):

> History is not a series of discontinuous events; the future is systematically connected to the past. New technologies are not deployed in a historical vacuum. Further, they are introduced into a particular set of social, economic, and ecological circumstances with established and knowable trajectories (p. 4).

As mentioned in Chapter 1, the impetus for this study is the problematization of current agri-biotech governance systems that focus on the assessments of environmental and human and animal health risks. Social, political and economic risks are not assessed in Canada's evaluation of plants with novel traits but their importance has been highlighted by scholars and industry experts alike. The history of Canadian agriculture and the social, political and economic developments in the agri-biotech industry have important implications for policy, as well as for the public's perception and understanding of these issues. There is ongoing research on holistic approaches to risks posed by GM technology, for instance at the Norwegian Institute of Gene Ecology (GenØk) in Tromsø, Norway (see Nielsen & Myhr, 2007) as well as the World Health Organization[69]. Additionally, the concept of systemic risks put forth by the Organization of Economic Co-operation and Development (OECD) provides additional insight on broadening the risk assessments of GM technologies (OECD, 2003).

If a holistic approach to governing GM technologies is a more favourable structure as claimed by its proponents, then its adoption by the jurisdictions responsible for the world's largest GM crop producers (which includes Canada) is of utmost importance for invoking meaningful changes to the global food system. In consideration of more holistic approaches to GMO governance, however, it is necessary to explore the contexts in which social, economic and historical circumstances of GMOs are debated. Put differently, this research project took the

[69] See http://www.who.int/foodsafety/publications/biotech/20questions/en/

need for holistic assessments of agricultural biotechnology as a jumping off point, leading to an examination of language use and dialogue in an effort to explore the social, economic, and political implications of GMOs. Agri-biotech corporations continue to wield significant and effective influences; the Canadian state remains in a quagmire, juggling the regulation and promotion of GMOs; and farm organizations are actively forming coalitions and making alliances in an effort to generate collective, strengthened voices. Analyzing discourses within these power relations reveals some of the important effects different forms of power can have. The instrumental and structural power of corporations and a supportive Canadian state can limit the presence and influence of less powerful voices, discursive power relations can reveal the effects of framing GMOs as a solution to global social problems, and the constitutive forces of historically embedded normative assumptions deepens our understandings of entrenched and latent power relations.

To close this dissertation, it is beneficial to outline two distinct conclusions. The first has to do with pairing theory with method; this study's combination of power theory and discourse analysis offers lessons learned, and valuable tools for future research. The second conclusion is empirical in focus—a hopeful vision for future policy and future research ends this chapter on a (mostly) positive note.

Pairing theory with method

If the methodological-theoretical approach taken in this study can be "conceived as spiraling rather than linear in its progression" (see Berg, 2001), we can begin to understand the value in combining the iterative processes of discourse analysis with a four-dimensional conception of

power. As the analyses move back and forth from textual and contextual analysis, and reflexive interpretation (see Ruiz Ruiz, 2009), evidence of instrumental, structural, discursive, and constitutive power relations foster a constant re-examination of information, ideas, and assumptions. Overall, this approach can be imagined as a cyclical process where the steps of discourse analysis are repeated as ideas are created, re-created, and progressed. Figure 1 below offers an illustration of this approach:

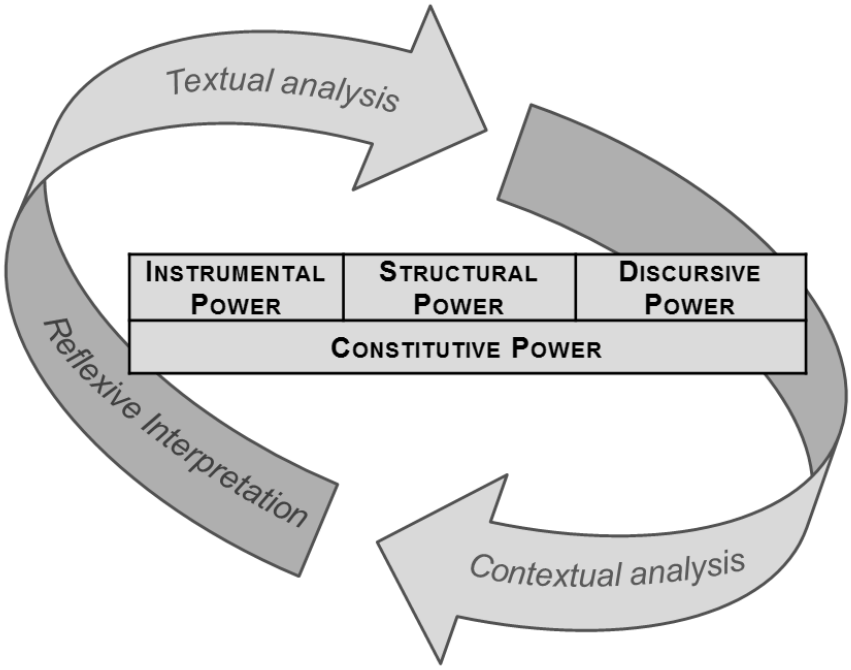

Figure 1: Representation of sociological discourse analysis within a four-dimensional power framework

Resulting from this approach, critical and nuanced understandings of different power relations were able to develop across the case studies (as well as within them). Important considerations were revealed regarding authorship and audience; as each case analyzed a different type of documentary material, the power dynamics also changed with regard to author intentions and assumptions, as well as target audience.

The first case study (Chapter 4), reviewed pro-biotech publicity materials and anti-biotech campaign materials, which is perhaps the clearest example of discourse production with clearly identifiable authors, audience, intentions, and so forth. These materials are developed for the purpose of informing and convincing the public of a particular position on agricultural biotechnology. An important focus in this analysis is how power relations infiltrate publicity and campaign discourses to shore up some messages while stifling others. For instance, this case study highlighted the ways in which pro-biotech materials exploit the supportive stance of the Canadian state and international organizations to further endorse their positions.

In the second case study (Chapter 5), the documentary materials analyzed consist of parliamentary proceedings on Bill C-18 in the House of Commons and Senate. Speeches from Members of Parliament (MPs) are written to reflect respective party positions, and the audience is made up of other MPs as well as the broader public. Additionally, witness speeches add an important layer to parliamentary discourse, representing outside voices from farm and civil society organizations. One unique aspect of this analysis of power and discourse is the combination of external/pre-existing forces (such as the cumulative support the Bill received from dozens of agricultural organizations) and internal parliamentary forces, notably the use of time allotment to limit debate on an already overwhelming, 'omnibus' style Bill.

In the third case study (Chapter 6) news media reports on GM alfalfa protests are analyzed. Here, the notion of authorship is more distant and removed, or at least more complicated. Protestors do not author the news reports, but have a significant influence in the production of news reports in the act of staging events considered 'worthy' of reporting. Also, both sides of the protest (to put it simply, as there are several 'sides' in this debate) contribute to the production of news media discourse in a variety of ways, including contributing statements

as sources in these reports. It is the reporters—and associated editors, copyeditors, and so forth—that play a distinct role regarding the writing and overall production of news media discourse. In this case study, important insights were drawn regarding the constitutive power embedded in the everyday practices and processes of news production. Unique conclusions that resulted from such an analysis are the need to reflect critically on news media culture and the notion of 'newsworthy', as well as the normative assumptions that may permeate news media discourse in everyday language.

For Ruiz Ruiz (2009), in sociological discourse analysis "it is common for the analysis to be carried out simultaneously on all three levels in a backwards and forwards movement that resembles a continuous dialogue among the levels" (p. 9). This dialogue is superimposed onto a four-dimensional power framework (illustrated in Figure 1) in order to thoroughly examine the ways in which different forms of power appear in textual patterns, social contexts, and embedded normative assumptions. There is a constant interplay between power and discourse, as each is capable of producing the other; the approach taken in this study seeks to unearth some of these dynamics. It is important to view power as not wholly negative, but as productive as well; forming knowledge and producing discourses (see Rabinow, 1984). Further, discourses are not only words and phrases, but involve actions and exchanges that bring about effects (see Foucault, 2003). A range of power relations come together in the production (and reproduction) of discourse. Discourse, in its many forms, is capable of exerting power—how we live in, understand, and respond to social contexts is a reflection of different discourses.

Canada's agri-biotech sector in the 21st century

What direction is Canada headed with regard to GM food and crop production in the 21st century? How will Canada's position reflect global trends? As research on the risks and benefits of GMOs continues to accumulate, more research will be needed on the discursive battles over how new findings are framed. As Chopra (2015) explains,

> Evidence is increasingly showing that GM crops have not lived up to their promises, and have led to a host of negative impacts. Ironically, however, as these failures start to add up, the narrative that we *need* GM crops to "feed the world" and to address hunger seems to be getting stronger. (p. 209, emphasis original)

As debates continue over the potential health, environmental, economic, social, political, and ethical implications of agricultural biotechnology, the construction and deployment of such narratives are becoming a critical point of analysis. Relatedly, Tomlinson's (2013) discussion of food security discourses provides a valuable case in point; the persistent narrative of "doubling food production by 2050" is being utilized as a discursive device to commit to technologies that may help increase global food production levels, for instance genetic modification technologies. Therefore, doubling food production has become a goal in food security policies, even though it fails to substantially reduce absolute levels of hunger, and insufficiently addresses climate change and diet-related illnesses (Tomlinson, 2013). The power to mobilize particular discourses for particular purposes is a critical area of research in which this dissertation contributes. Canada's agri-biotech sector in the 21st will benefit from further research in (at least) two areas: the potential for public and open-source breeding and methods for dealing with complexity.

As plant breeding becomes increasingly privatized, visions for maintaining and expanding the availability of less marketable/profitable seeds become increasingly essential. In

her book “Saving more than seeds: Practices and politics of seed saving”, Phillips (2013) explains the potential implications of a Canadian seed regime under UPOV ’91 rules, including the treatment of seed saving as a privilege instead of a right or a norm. With the passing of Bill C-18, this has become a reality; Canada now follows 1991 UPOV rules. As privatization and corporate control over seeds become ubiquitous, further research is needed on the implications of this system, and the potentiality of alternatives. One such alternative may come from the Open Source Seed Initiative (OSSI), which “intends to encourage and reward the sharing rather than the restriction of germplasm, to revitalize public plant breeding and to integrate the skills and capacities of farmer breeders with those of plant scientists” (Kloppenburg, 2014, p. 1226). Although this initiative faces its own challenges, limitations, and disagreements, there is potential is such ideas. As Kloppenburg (2008) writes of open source principles, “they encourage us to look beyond the constraints of the taken-for-granted, dominant system and ask us to embrace the potentialities of freely given and shared social labor” (p. 20). Future research on the potentiality for open source initiatives and increased public breeding are becoming increasingly worthwhile.

To deal with the increasing complexity of agri-biotech issues, the effective governance of agricultural biotechnology may necessitate a more contextually sensitive diversification of knowledge and value forms through a pluralistic ‘opening up’ of participation processes—one that “helps accommodate (rather than manage) irreconcilable values and interests” (Stirling, 2008, p. 285). Approaches well-suited to this direction of research are those capable of dealing with complexity and complex systems (see Funtowicz & Ravetz, 1994; Urry, 2005). Put briefly, there is a need to “keep it complex” when dealing with complex problems that have immeasurable uncertainties (Stirling, 2010). Past experiences with environmental contaminants

such as lead illustrate the limitations of relying on additional knowledge to reduce uncertainties; there are circumstances where complex, uncertain risks are not solvable by simply adding knowledge (Gibson, 2005). Such circumstances necessitate the inclusion of diverse perspectives through the open involvement of affected citizens within decision-making processes (Gibson, 2005). The agri-biotech industry has been embedded in economic (e.g. neoliberal discourse) and genetic (e.g. modern scientific discourse) reductionism, with critics vying for greater consideration of uncertainties and a plurality of perspectives (see McAfee, 2003). Future research on Canadian agriculture and agrifood, particularly research that examines GMO issues, will benefit from an appreciation for complexity.

Future research involving both open source seeds and complex problem solving can be approached through the concepts of knowledge, discourse, and power. The production and deployment of these concepts engages critically with issues like the dominant system of plant breeding and the need to open up decision-making to include diverse perspectives. Insight can be taken from Foucault (1972), who argues that "we must question those ready-made syntheses, those groupings that we normally accept before any examination, those links whose validity is recognized from the outset" (p. 22). How we speak and write about GMOs, and other issues regarding agriculture and agrifood, has significant impacts on how we form opinions, proceed with scientific and technological assessments, and engage in law and policy making. Future research on Canadian agriculture and agrifood debates is needed, including research that takes on the continuous and necessary task of unearthing the power in GMO discourse.

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Legislation

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Appendix I

Anti-biotech campaigns and pro-biotech publicity materials

Anti-biotech campaign materials from CBAN

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2. Canadian Biotechnology Action Network (CBAN), 2010a. Info and action flyer on SmartStax. Available from http://www.cban.ca/Resources/Topics/GE-Crops-and-Foods-On-the-Market/Corn/Info-and-Action-Flyer-on-SmartStax
3. Canadian Biotechnology Action Network (CBAN), 2010b. Bill C-474 Flyer for printing. Available from http://www.cban.ca/Take-Action/Action-Closed-Bill-C-474/Bill-C-474-Flyer-for-printing
4. Canadian Biotechnology Action Network (CBAN), 2011. Stop GM fish flyer. Available from http://www.cban.ca/Resources/Topics/GE-Fish/Stop-GM-Fish-Flyer
5. Canadian Biotechnology Action Network (CBAN), 2012. The genetically modified "non-browning" apple. CBAN Factsheet. Available from http://www.cban.ca/Resources/Topics/GE-Crops-and-Foods-Not-on-the-Market/Apple/GM-Apple-Factsheet
6. Canadian Biotechnology Action Network (CBAN), 2012b. CBAN's quick guide to GM foods. Available from http://www.cban.ca/Resources/Tools/Pamphlets-and-Factsheets/CBAN-s-Quick-Guide-to-GM-Foods-B-W
7. Canadian Biotechnology Action Network (CBAN), 2012c. GM apple flyer (BC). Available from http://www.cban.ca/Resources/Topics/GE-Crops-and-Foods-Not-on-the-Market/Apple/GM-Apple-Flyer-BC
8. Canadian Biotechnology Action Network (CBAN), 2013a. Handout on GM alfalfa to use at rallies: For farmers. Available from http://www.cban.ca/Resources/Topics/GE-Crops-and-Foods-Not-on-the-Market/Alfalfa/Day-of-Action-to-Stop-GM-Alfalfa-April-9/Action-Kit-Day-of-Action-April-9/Handout-on-GM-Alfalfa-for-use-at-rallies-For-Farmers

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10. Canadian Biotechnology Action Network (CBAN), 2013c.The inevitability of contamination from GM alfalfa release in Ontario. Report Summary. Available from http://www.cban.ca/Resources/Tools/Reports/The-Inevitability-of-Contamination-from-GM-Alfalfa-Release-in-Ontario
11. Canadian Biotechnology Action Network (CBAN), 2013d.The inevitability of contamination from GM alfalfa release in Ontario. Full Report. Available from http://www.cban.ca/Resources/Tools/Reports/The-Inevitability-of-Contamination-from-GM-Alfalfa-Release-in-Ontario
12. Canadian Biotechnology Action Network (CBAN), 2013e. Media advisory. Available from http://www.cban.ca/Press/Media-Advisory3
13. Canadian Biotechnology Action Network (CBAN), 2013f. Poster: Stop GM alfalfa, Protect family farms. Available from http://www.cban.ca/Resources/Topics/GE-Crops-and-Foods-Not-on-the-Market/Alfalfa/Poster-Stop-GM-Alfalfa-Protect-Family-Farms
14. Canadian Biotechnology Action Network (CBAN), 2013g. GM alfalfa: Meat info graphic. Available from http://www.cban.ca/Resources/Topics/GE-Crops-and-Foods-Not-on-the-Market/Alfalfa/Day-of-Action-to-Stop-GM-Alfalfa-April-9/Posters-for-Day-of-Action/Info-Graphics-for-Facebook/GM-Alfalfa-Meat-Info-Graphic
15. Canadian Biotechnology Action Network (CBAN), 2013h. Genetically Modified Cotton, CBAN Factsheet. http://www.cban.ca/Resources/Topics/GE-Crops-and-Foods-On-the-Market/Cotton/Genetically-Modified-Cotton-CBAN-Factsheet2
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18. Canadian Biotechnology Action Network (CBAN), 2014c. GM fish info flyer. http://www.cban.ca/Resources/Topics/GE-Fish/GM-Fish-Info-Flyer
19. Canadian Biotechnology Action Network (CBAN), 2014d. Info on GM sweet corn. http://www.cban.ca/Resources/Topics/GE-Crops-and-Foods-On-the-Market/Corn/Info-on-GM-sweet-corn
20. Canadian Biotechnology Action Network (CBAN), 2014e. GM apple info flyer. Available from http://www.cban.ca/Resources/Topics/GE-Crops-and-Foods-Not-on-the-Market/Apple/GM-Apple-Info-Flyer
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23. Canadian Biotechnology Action Network (CBAN), 2015c. Day of action to stop GM alfalfa, April 9. Available from http://www.cban.ca/Resources/Topics/GE-Crops-and-Foods-Not-on-the-Market/Alfalfa/Day-of-Action-to-Stop-GM-Alfalfa-April-9
24. Canadian Biotechnology Action Network (CBAN), 2015d. Take Action. Available from http://www.cban.ca/Take-Action

Pro-biotech publicity materials from the CBI

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26. Council for Biotechnology Information (CBI), 2011a. Talking about agricultural biotechnology. Fact Sheets. On file with author.
27. Council for Biotechnology Information (CBI), 2011b. Biotechnology and biofuels. Fact Sheets. On file with author.
28. Council for Biotechnology Information (CBI), 2011c. Addressing the challenges of drought. Fact Sheets. On file with author.

29. Council for Biotechnology Information (CBI), 2011d. Understanding Canadian Biotech Regulations. Fact Sheets. On file with author.
30. Council for Biotechnology Information (CBI), 2011e. Food for Your Good Health. Fact Sheets. On file with author.
31. Council for Biotechnology Information (CBI), 2011f. Protecting our plant. Fact Sheets. On file with author.
32. Council for Biotechnology Information (CBI), 2011g. Biotech basics - a guide to plant biotechnology in Canada. Fact Sheets. On file with author.
33. Council for Biotechnology Information (CBI), 2011h. Good ideas are growing: Healthy recipes. On file with author.
34. Council for Biotechnology Information (CBI), 2011i. About the Council for Biotechnology Information.
35. Council for Biotechnology Information (CBI), 2011j. Frequently Asked Questions.
36. Council for Biotechnology Information (CBI), 2010. Look closer at biotechnology. Available from http://c.ymcdn.com/sites/my.aspb.org/resource/resmgr/Education/Ag_Ed_Activities_Book.pdf

Appendix II
Chamber Sittings and Committee Meetings on Bill C-18, the *Agricultural Growth Act*

House of Commons, Introduction and First Reading

Canada, Parliament, *House of Commons Debates*, 41st Parliament, 2nd Session, Vol. 147, Number 033 (December 9, 2013) at 1935 <http://www.parl.gc.ca/content/hoc/House/412/Debates/033/HAN033-E.PDF> accessed April 2015

House of Commons, Second Reading

Canada, Parliament, *House of Commons Debates*, 41st Parliament, 2nd Session, Vol. 147, Number 055 (March 3, 2014) at 3396 <http://www.parl.gc.ca/content/hoc/House/412/Debates/055/HAN055-E.PDF> accessed April 2015

Canada, Parliament, *House of Commons Debates*, 41st Parliament, 2nd Session, Vol. 147, Number 089 (May 26, 2014) at 5611 <http://www.parl.gc.ca/content/hoc/House/412/Debates/089/HAN089-E.PDF> accessed April 2015

Canada, Parliament, *House of Commons Debates*, 41st Parliament, 2nd Session, Vol. 147, Number 102 (June 12, 2014) at 6807 <http://www.parl.gc.ca/content/hoc/House/412/Debates/102/HAN102-E.PDF> accessed April 2015

Canada, Parliament, *House of Commons Debates*, 41st Parliament, 2nd Session, Vol. 147, Number 103 (June 13, 2014) at 6815 <http://www.parl.gc.ca/content/hoc/House/412/Debates/103/HAN103-E.PDF> accessed April 2015

Canada, Parliament, *House of Commons Debates*, 41st Parliament, 2nd Session, Vol. 147, Number 104 (June 16, 2014) at 6856 <http://www.parl.gc.ca/content/hoc/House/412/Debates/104/HAN104-E.PDF> accessed April 2015

House of Commons, Second Reading and Referral to Committee

Canada, Parliament, *House of Commons Debates*, 41st Parliament, 2nd Session, Vol. 147, Number 105 (June 17, 2014) at 6954 <http://www.parl.gc.ca/content/hoc/House/412/Debates/105/HAN105-E.PDF> accessed April 2015

House of Commons, Standing Committee on Agriculture and Agri-food

Canada, Parliament, House of Commons, Standing Committee on Agriculture and Agri-food, *Minutes of Proceedings and Evidence*, 41st Parliament, 2nd Session, Meeting No. 37 (October 7, 2014). <http://www.parl.gc.ca/HousePublications/Publication.aspx?Language=E&Mode=1&Parl=41&Ses=2&DocId=6718789&File=0> accessed April 2015

Canada, Parliament, House of Commons, Standing Committee on Agriculture and Agri-food, *Minutes of Proceedings and Evidence*, 41st Parliament, 2nd Session, Meeting No. 38 (October 9, 2014). <http://www.parl.gc.ca/HousePublications/Publication.aspx?DocId=6724573&Language=E&Mode=1&Parl=41&Ses=2> accessed April 2015

Canada, Parliament, House of Commons, Standing Committee on Agriculture and Agri-food, *Minutes of Proceedings and Evidence*, 41st Parliament, 2nd Session, Meeting No. 39 (October 21, 2014). <http://www.parl.gc.ca/HousePublications/Publication.aspx?DocId=6735055&Language=E&Mode=1&Parl=41&Ses=2> accessed April 2015

Canada, Parliament, House of Commons, Standing Committee on Agriculture and Agri-food, *Minutes of Proceedings and Evidence*, 41st Parliament, 2nd Session, Meeting No. 40 (October 28, 2014). <http://www.parl.gc.ca/HousePublications/Publication.aspx?DocId=6743606&Language=E&Mode=1&Parl=41&Ses=2> accessed April 2015

Canada, Parliament, House of Commons, Standing Committee on Agriculture and Agri-food, *Minutes of Proceedings and Evidence*, 41st Parliament, 2nd Session, Meeting No. 41 (October 30, 2014). <www.parl.gc.ca/HousePublications/Publication.aspx?DocId=6750111&Language=E&Mode=1&Parl=41&Ses=2> accessed April 2015

Canada, Parliament, House of Commons, Standing Committee on Agriculture and Agri-food, *Minutes of Proceedings and Evidence*, 41st Parliament, 2nd Session, Meeting No. 42 (November 4, 2014). <www.parl.gc.ca/HousePublications/Publication.aspx?DocId=6759558&Language=E&Mode=1&Parl=41&Ses=2> accessed April 2015

Canada, Parliament, House of Commons, Standing Committee on Agriculture and Agri-food, *Minutes of Proceedings and Evidence*, 41st Parliament, 2nd Session, Meeting No. 43 (November 4, 2014). <http://www.parl.gc.ca/HousePublications/Publication.aspx?DocId=6761606&Language=E&Mode=1&Parl=41&Ses=2> accessed April 2015

Canada, Parliament, *House of Commons Debates*, 41st Parliament, 2nd Session, Vol. 147, Number 139 (November 5, 2014) at 1600 <http://www.parl.gc.ca/content/hoc/House/412/Debates/139/HAN139-E.PDF> accessed April 2015

Committee Reporting the Bill with Amendments

Canada, Parliament, House of Commons, Standing Committee on Agriculture and Agri-food, *Bill C-18, An Act to amend certain Acts relating to agriculture and agri-food* (November 5, 2014). 5th Report, 41st Parliament, 2nd Session. Available <http://www.parl.gc.ca/HousePublications/Publication.aspx?DocId=6752719&Language=E&Mode=1&Parl=41&Ses=2>

House of Commons, Report Stage

Canada, Parliament, *House of Commons Debates*, 41st Parliament, 2nd Session, Vol. 147, Number 142 (November 17, 2014) at 1220 <http://www.parl.gc.ca/content/hoc/House/412/Debates/142/HAN142-E.PDF> accessed April 2015

Canada, Parliament, *House of Commons Debates*, 41st Parliament, 2nd Session, Vol. 147, Number 144 (November 19, 2014) at 1530 <http://www.parl.gc.ca/content/hoc/House/412/Debates/144/HAN144-E.PDF> accessed April 2015

House of Commons, Third Reading

Canada, Parliament, *House of Commons Debates*, 41st Parliament, 2nd Session, Vol. 147, Number 147 (November 24, 2014) at 1200 <http://www.parl.gc.ca/content/hoc/House/412/Debates/147/HAN147-E.PDF> accessed April 2015

Senate, First Reading

Canada, Parliament, *Debates of the Senate*, 41st Parliament, 2nd Session, Vol. 149, Number 98 (November 25, 2014) at 1440 <http://www.parl.gc.ca/Content/Sen/Chamber/412/Debates/pdf/098db_2014-11-25-e.pdf> accessed April 2015

Senate, Second Reading

Canada, Parliament, *Debates of the Senate*, 41st Parliament, 2nd Session, Vol. 149, Number 102 (December 3, 2014) at 1530 <http://www.parl.gc.ca/Content/Sen/Chamber/412/Debates/pdf/102db_2014-12-03-e.pdf> accessed April 2015

Canada, Parliament, *Debates of the Senate*, 41st Parliament, 2nd Session, Vol. 149, Number 105 (December 9, 2014) at 1440 <http://www.parl.gc.ca/Content/Sen/Chamber/412/Debates/pdf/105db_2014-12-09-e.pdf> accessed April 2015

Senate, Standing Senate Committee on Agriculture and Forestry

Canada, Parliament, Senate, Standing Committee on Agriculture and Forestry, *Proceedings of the Standing Committee on Agriculture and Forestry*, 41st Parliament, 2nd Session, Issue No. 22, Committee Meeting 50. (December 11, 2014) <http://www.parl.gc.ca/Content/SEN/Committee/412/agfo/pdf/22issue.pdf > accessed April 2015

Canada, Parliament, Senate, Standing Committee on Agriculture and Forestry, *Proceedings of the Standing Committee on Agriculture and Forestry*, 41st Parliament, 2nd Session, Issue No. 23, Committee Meeting 51. (January 29, 2015) <http://www.parl.gc.ca/Content/SEN/Committee/412/agfo/pdf/23issue.pdf > accessed April 2015

Canada, Parliament, Senate, Standing Committee on Agriculture and Forestry, *Proceedings of the Standing Committee on Agriculture and Forestry*, 41st Parliament, 2nd Session, Issue No. 23, Committee Meeting 52. (February 3, 2015) <http://www.parl.gc.ca/Content/SEN/Committee/412/agfo/pdf/23issue.pdf > accessed April 2015

Canada, Parliament, Senate, Standing Committee on Agriculture and Forestry, *Proceedings of the Standing Committee on Agriculture and Forestry*, 41st Parliament, 2nd Session, Issue No. 23, Committee Meeting 53. (February 5, 2015) <http://www.parl.gc.ca/Content/SEN/Committee/412/agfo/pdf/23issue.pdf > accessed April 2015

Canada, Parliament, Senate, Standing Committee on Agriculture and Forestry, *Proceedings of the Standing Committee on Agriculture and Forestry*, 41st Parliament, 2nd Session, Issue No. 24, Committee Meeting 54. (February 17, 2015) <http://www.parl.gc.ca/Content/SEN/Committee/412/agfo/pdf/24issue.pdf> accessed April 2015

Canada, Parliament, *Debates of the Senate*, 41st Parliament, 2nd Session, Vol. 149, Number 118 (February 18, 2015) at 2903 <http://www.parl.gc.ca/Content/Sen/Chamber/412/Debates/pdf/118db_2015-02-18-e.pdf> accessed April 2015

Committee Report Presented without Amendment

Canada, Parliament, Senate, Standing Committee on Agriculture and Forestry, *Bill C-18, An Act to amend certain Acts relating to agriculture and agri-food* (February 18, 2015). 7th Report, 41st Parliament, 2nd Session. Available <http://www.parl.gc.ca/Content/SEN/Committee/412/agfo/rep/rep07feb15-e.htm>

Senate, Third Reading

Canada, Parliament, *Debates of the Senate*, 41st Parliament, 2nd Session, Vol. 149, Number 119 (February 19, 2015) at 2930 <http://www.parl.gc.ca/Content/Sen/Chamber/412/Debates/pdf/119db_2015-02-19-e.pdf> accessed April 2015

Canada, Parliament, *Debates of the Senate*, 41st Parliament, 2nd Session, Vol. 149, Number 120 (February 24, 2015) at 2952 <http://www.parl.gc.ca/Content/Sen/Chamber/412/Debates/pdf/120db_2015-02-24-e.pdf> accessed April 2015

**Bill passed by the Senate without amendment*

Royal Assent

Canada, Parliament, *Debates of the Senate*, 41st Parliament, 2nd Session, Vol. 149, Number 121 (February 25, 2015) at 2977 <http://www.parl.gc.ca/Content/Sen/Chamber/412/Debates/pdf/121db_2015-02-25-e.pdf> accessed April 2015

Appendix III
News on GM alfalfa in Canada (by province), 2011 to 2015

International News

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Canada (National News)

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3. CBC News. (2013, April 9). Genetically modified alfalfa protested by Canadian farmers. *CBC News*. Retrieved from http://www.cbc.ca/news/canada/windsor/genetically-modified-alfalfa-protested-by-canadian-farmers-1.1380249
4. CBC News. (2013, July 16). Farmers protest introduction of GM alfalfa. *CBC News*. Retrieved from http://www.cbc.ca/news/business/farmers-protest-introduction-of-gm-alfalfa-1.1363280
5. Loney, H. (2012, October 24). Farmers union protests genetically modified alfalfa in eastern Canada. *Global News*. Retrieved from http://globalnews.ca/news/300747/farmers-union-protests-genetically-modified-alfalfa-in-eastern-canada/
6. Manasan, A. (2013, April 11). GMO fears do not 'translate to the average consumer'. *CBC News*. Retrieved from http://www.cbc.ca/news/canada/gmo-fears-do-not-translate-to-the-average-consumer-1.1362542
7. Roundup Ready alfalfa not on deck for spring. (2013, April 10). *Canadian Cattlemen*. Retrieved from http://www.canadiancattlemen.ca/daily/roundup-ready-alfalfa-not-on-deck-for-spring

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Northern Canada

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12. Ronson, J. (2013, April 10). Farmers protest genetically modified alfalfa, *Yukon News*. Retrieved from http://yukon-news.com/news/farmers-protest-genetically-modified-alfalfa

British Columbia

13. Bernard, R. (2013, June 30). Locals fear advent of GMO alfalfa in Canadian fields. *News 1130*. Retrieved from http://www.news1130.com/2013/06/30/locals-fear-advent-of-gmo-alfalfa-in-canadian-fields/
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15. Nelson Daily Staff. (2013, April 9). Stop 'genetically modified alfalfa' protest comes to Nelson, *The Castlegar Source*. Retrieved from http://castlegarsource.com/news/stop-genetically-modified-alfalfa-protest-comes-nelson-24154#.UWmdZ4IXogs

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18. Smith, J. (2013, April 12). GMO rally sends a message, *Vernon Morning Star*. Retrieved from http://www.vernonmorningstar.com/news/202601161.html
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