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Global Climate Change and the Industrial Animal Agriculture Link: The Construction of Risk

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Abstract

This paper examines discourses of stakeholders regarding global climate change to assess whether and how they construct industrial animal agriculture as posing a risk. The analysis assesses whether these discourses have shifted since the release of *Livestock's Long Shadow*, a report by the United Nation's Food and Agriculture Organization, which indicated that the industrial animal agriculture sector as a whole contributes more to global climate change than the transportation sector. Using Ulrich Beck's theorizing of the "risk society," this paper examines how various animal rights and welfare groups, environmental organizations, meat industry stakeholders, governmental agencies, and newspapers in Canada, the United States, and internationally investigate and construct industrial animal agriculture as a risk, if at all, and how their respective discourses conflict. The findings indicate that while some stakeholders acknowledge industrial animal agriculture's contribution to global climate change, for the most part the problematization of animal agriculture has not increased since the release of *Livestock's Long Shadow*, and the animal agriculture industry has seemingly not lost its power to "rationalize risk."

Keywords

global climate change, industrial animal agriculture, *Livestock's Long Shadow* report, risk society

Introduction

"Think you can be a meat-eating environmentalist? Think again." This slogan appears on bumper stickers, pins, and T-shirts sported by environmentalists and animal rights advocates alike. The question posed in this slogan is becoming increasingly salient against the backdrop of global climate change. A 2006 report by the United Nation's Food and Agricultural Organization entitled *Livestock's Long Shadow* examined the contribution of industrial nonhuman animal agriculture (referred to hereafter simply as industrial animal agriculture) to global climate change. Researchers aggregated emissions based on the livestock commodity chain and concluded that industrial animal agriculture produces 18 percent of greenhouse gas emissions. While natural scientists are

beginning to research the problematic contributions of industrial animal agriculture to global climate change, it is unclear to what extent meat industry interest groups, social movement organizations, and the media are discussing the contribution of industrial animal agriculture to global climate change, and whether the Food and Agriculture Organization report signals the opening up of a discursive space surrounding the risk that industrial animal agriculture poses to the global climate.

This paper examines whether there has been increased discursive activity about industrial animal agriculture's effects on global climate change following the publication of the Food and Agriculture Organization report. We use Ulrich Beck's theorizing of the "risk society" and related concepts to examine the link between industrial animal agriculture and global climate change. Specifically, we look at whether meat industry stakeholders have lost the power to "rationalize risk" (Beck & Willms, 2004; Beck, 1992).

We begin with a brief discussion of the research on global climate change and how industrial animal agriculture has recently been implicated. This is followed by an examination of Beck's theoretical perspective and how it might be applied to the topic at hand. We then describe the methods and data used in the study. The remainder of the paper is devoted to the study's findings and their implications.

Global Climate Change

There is a growing scientific consensus that the average global surface temperature has increased since 1861 and that the increase observed in the 20th century is the largest of any century throughout the past 1,000 years (IPPC, 2001). Discussion of the anthropogenic causes of increasing temperatures has focused almost exclusively on carbon dioxide, which has been identified as the most important anthropogenic greenhouse gas (IPCC, 2007). Sources of carbon dioxide emissions include the burning of fossil fuels, automobile emissions, deforestation, power plants, and industrial processes (The Nature Conservancy, 2005). Methane gas is generally recognized as the second-most consequential greenhouse gas; it is particularly problematic because it absorbs and radiates approximately 21 times the amount of heat energy that carbon dioxide traps (Environment Canada, 2001). Anthropogenic causes of methane production include fossil fuel production and transport, livestock, and waste management (The Environmental Literacy Council, 2002).

Despite the increasing amount of research on global climate change, until recently animal agriculture has not generally been recognized as a significant contributor, and instead attention has focused on reducing carbon dioxide

emissions in the transportation sector. The relative inattention to the role of industrial animal agriculture in global climate change was punctuated with the Food and Agriculture Organization's 2006 release of the *Livestock's Long Shadow* report. The report explains that scientists have traditionally classified producers of greenhouse gases based on their participation in land-use changes, agriculture, and transportation. This classification is problematic because the contributions of agriculture bleed over into the other sectors. What the Food and Agriculture Organization did instead in its 2006 report was aggregate emissions based on the livestock commodity chain, including feed production, animal production, and processing and transporting animal products. The authors of the report conclude that globally the livestock sector is responsible for 18 percent of greenhouse gas emissions—more than the transportation sector worldwide (Steinfeld et al., 2006).

The report explains that the industrial animal agriculture industry contributes 9 percent of carbon dioxide, 37 percent of methane, and 65 percent of nitrous oxide emissions. The industry contributes to the anthropogenic production of carbon dioxide through deforestation for the purposes of livestock grazing and also via fossil fuel consumed in producing livestock feed and transporting feed and animal products. Methane gas is emitted through rumen fermentation and livestock waste. Nitrous oxide is produced from leguminous feed crops and chemical fertilizers that are applied to feed crops (Steinfeld et al., 2006, p. 272). The Food and Agriculture Organization report concludes that the industrial animal agriculture sector is one of the top contributors to what has come to be considered the most serious environmental problem of our time (Steinfeld et al., 2006). The extent to which various stakeholders have constructed this sector as constituting a risk to global climate change before and after the Food and Agriculture Organization report's release, however, is unclear. To help explain the construction of this risk, we turn to Ulrich Beck's work.

Risk Society and Environmental Harm

Beck (2002, 2001, 1995, 1992), Beck and Willms (2004), Giddens (1994, 1991, 1990), and Luhmann (1991) have all argued that risk is a key aspect of late modernity. Beck's theorizing in this regard has arguably been the most influential, and he devotes considerable attention to the relationships among culture, the environment, and nature.

Beck argues that we live in a "risk society" in which risks manufactured by humans are global (Beck et al., 2004; Beck, 2001, 1992). He emphasizes that the risks we face and the responses to them change over time. More specifically,

Beck describes the transition between what he refers to as the first and second modernities (Beck et al., 2004). During the first modernity, which is centered around the nation-state, society is concerned with controlling industrialization's relatively predictable side effects and distributing "social goods." In contrast, the second modernity, a non-state-centered era, is characterized by concern over the distribution of "social bads" and the unpredictability and uncertainty of various global risks (Beck et al., 2004); Beck (1995) highlights environmental risks as exemplifying the latter.

During second modernity the rationalization of risks becomes more difficult, and spaces for competing discourses open up (Beck et al., 2004). The construction of risks is said to be influenced by various stakeholders (Beck et al., 2004; Walters, 2004); Beck argues, however, that the ability of previously powerful stakeholders (e.g., business interests) to construct risk becomes circumscribed during second modernity. Risks also become less tangible in late modernity and frequently require expert identification. People are therefore left to rely on experts to understand which risks threaten them (Beck, 1992; Giddens, 1991, 1990) and consequently, in the period of second modernity, or the "risk society," the "politics of risk reflect politics of knowledge" (Frey, McCormick, & Rosa, 2007, p. 86).

In light of these concepts, we identified the release of *Livestock's Long Shadow* by the Food and Agriculture Organization as a potential tipping point in discursively constructing industrial animal agriculture as a risk to the global climate, since the report was written by internationally renowned scientists who demonstrated empirically that industrial animal agriculture poses a greater risk vis-à-vis global climate change than the transportation sector, which has been the focus of much of the effort to mitigate global climate change. It should be noted, however, that a total opening up of discourses problematizing the risk of global climate change posed by industrial animal agriculture after the report's release would be unlikely, partially because, as Nestle (2002) demonstrates, the food lobby remains quite powerful. Instead, we anticipated more modest ruptures, and we used Beck's concepts of "risk conflicts" and "relations of definition" to search for these ruptures.

"Risk Conflicts" and the "Relations of Definition"

Beck (in Beck et al., 2004) asserts that because of a lack of preconditions that help to rationalize and socially construct risk successfully, second-modernity risks typically give rise to risk conflicts. He argues that as a result of risk conflicts, risks become more apparent, and victims become unified in a global risk population. In the risk society, new sources of conflict and consensus are generated, and the push to eliminate scarcity is replaced by efforts to eliminate

risk. Beck goes on to say that “even if the consciousness and the forms of political organization for this are still lacking... through the dynamic of endangerment it sets in motion, [risk society] *undermines the borders of nation states as much as those of military alliances and economic blocs*... [R]isk societies bring about ‘communities of danger’ that ultimately can only be comprised in the United Nations” (Beck 2001, p. 47; emphasis in original). The report generated by the Food and Agriculture Organization, an agency of the United Nations, may be a manifestation of a developing “community of danger.”

Beck (2001, Beck et al., 2004) emphasizes that risks are socially constructed and depend on power relations. McGuigan (2006, p. 215) succinctly articulates this point vis-à-vis environmental risks: “Risk issues are defined in the public sphere by the contest of contending forces—most especially between environmental campaigns and corporate public relations—in relation to the process of mass mediation.” Beck’s term “relations of definition” refers to the definition of risk and is intended to illuminate the various power relations that are involved in this process.

Beck and Global Climate Change

Lever-Tracy (2008) points out that while Beck’s theorizing regarding the risk society is the only well-known social theory focused on the interface of society and nature, Beck fails to apply his concept to global climate change. It is important to note, however, that when Beck first wrote *Risk Society: Towards a New Modernity* in 1986 (translated from the German in 1992), global climate change was not a prominent issue. In recent years, Beck (2002) has revisited his concept of the world risk society, specifically citing global climate change as one of its dimensions, and others have also highlighted the applicability of the perspective to global climate change. Macnaghten (2006), for instance, argues that “many of the exemplary cases of the risk society lie broadly in the environmental domain, including in recent years the almost unfathomable risks surrounding anthropogenic climate change.”

Lever-Tracy (2008) takes the position, however, that Beck’s perspective would not be useful for examining global climate change because Beck sees globalized risks as emerging from advanced technologies, and Lever-Tracy asserts that the most detrimental impact on climate comes from burning fossil fuels through basic industrial production. While these industrial processes undoubtedly play a role in global climate change, industrial animal agriculture is also a significant contributor, and within the industry advanced technologies are being applied to maximize production, thus increasing the risk of global climate change.

We are therefore not convinced by Lever-Tracy's assertion that Beck's theorizing would not be useful in examining aspects of global climate change. In fact, we maintain that examining the relations of definition and risk conflicts with regard to global climate change could be particularly valuable. Global climate change is a transnational risk, which may make it increasingly difficult to control how it is socially constructed. This could open space for competing discursive activity from industry, government, scientists, and social movements. In this case, the Food and Agriculture Organization of the United Nations has stepped in to address the "community of danger" that has been created. We will investigate the impact of this development on the discourses of various stakeholder groups and the media, and the potential risk conflicts that ensue.

Research Methods and Data

This study begins to fill a gap in the literature by addressing the following question: since the release of *Livestock's Long Shadow*, have the global climate change discourses articulated by government agencies, industry stakeholders, news media, and environmental and animal rights/welfare organizations shifted toward constructing industrial animal agriculture as a risk to the global climate? The central hypothesis is that, after the release of a report by a prominent international agency, and consistent with Beck's (2001) proposition that rationalizing risks becomes increasingly difficult with the globalization of risks and the transition to second modernity, a shift will be observed in the discourses regarding global climate change toward greater problematization of animal agriculture and its contribution to global climate change. To address this question, critical discourse analysis is employed vis-à-vis written documents produced by a sample of international stakeholder groups and groups based in Canada and the United States.

The Canadian, US, and international environmental organizations and animal welfare/rights groups included in the sample were selected based on the following criteria: (1) they have a broad mandate that includes addressing global climate change, and (2) they are large enough to produce sufficient documents for analysis. The Canadian environmental and animal welfare/rights groups examined include the David Suzuki Foundation, the Sierra Club of Canada, the Animal Alliance of Canada, and ARK-II. The Nature Conservancy, the Environmental Defense Fund, People for the Ethical Treatment of Animals (PETA), and In Defense of Animals are the US groups included in the sample. The international groups selected include Green Peace Interna-

tional, Friends of the Earth International, the World Society for the Protection of Animals, and the International Fund for Animal Welfare.

The American Meat Institute and the Canadian Meat Council, national trade organizations that represent the industries, are included in the analyses as industry stakeholder groups. The governmental agencies examined include the US Environmental Protection Agency (EPA) and Environment Canada because addressing global climate change falls within their mandates. The US Department of Agriculture (USDA) as well as Agriculture and Agri-Food Canada are examined because these agencies are most responsible for animal agriculture. Web pages and linked documents for each organization starting two years prior to the November 2006 release of the Food and Agriculture Organization report, up to and including April 2008, were analyzed in order to investigate what is (or is not) stated on the topic of animal agriculture and its relation to global climate change.

Newsprint media analysis forms another component of the study. *USA Today* and *The Globe and Mail* were the newspapers selected for examination because they were the widest circulating national print newspapers in the United States and Canada, respectively, at the time of data collection. For this analysis, relevant articles, opinion-editorials, and editorials were located via the Factiva newspaper database using keywords such as global climate change, global warming, and agriculture.¹

The research began with the collection and cataloguing of documents related to global climate change from each organization. The types of documents accessed and analyzed include the text the organizations publish on their own webpages, links to news reports, newsletters, magazines, fact sheets, pamphlets, press releases, and blogs. The types of documents the industry groups provide on their websites, which we analyzed, include the text they published on their webpages, press releases, links to media reports, their own publications, and fact sheets. The documents analyzed that were made available on the government agency websites include the text they published on their webpages, press releases, news reports, government publications, and fact sheets. As mentioned above, the items analyzed from the newspapers include articles, editorials, and opinion-editorials.

Basic information about the documents was recorded, such as the date of the text, the author, and source of the document. Open coding was conducted to elicit the central themes. In doing so we examined whether or not the source specifically cited the *Livestock's Long Shadow* report, and we took notes regarding any change in the way in which animal agriculture was discussed following the release of *Livestock's Long Shadow*. We then undertook intensive coding around each central theme that we uncovered.

An example will help to explain the process used. Open coding of the animal advocacy and environmental group discourses elicited a theme around dietary recommendations. Intensive coding within this theme resulted in more specific codes, including recommendations to engage in vegetarianism or veganism, to consume organic/locally produced/sustainable meat, and simply to consume less meat. We use a variety of quotes from the coding categories in reporting the research findings (in the next section) to provide support for our interpretations and conclusions. These findings are then tied to the literature and theoretical framework in the Discussion section.

Discursive Activity Surrounding Industrial Animal Agriculture and Global Climate Change

Animal Welfare/Rights Groups

People for the Ethical Treatment of Animals (PETA) was the only organization among those examined that increased its problematization of industrial animal agriculture following the release of *Livestock's Long Shadow*. In 2006 (the year the report was released), PETA cited seven news stories problematizing industrial animal agriculture. It cited eight news stories in 2007 and 18 articles in the first quarter of 2008. This is an increase of over 100 percent in the first quarter of 2008 alone. While PETA was the only group that increased its discursive activity around this topic over time, all the other animal rights/welfare groups, with the exception of the International Fund for Animal Welfare, did link animal agriculture to global climate change prior to the Food and Agriculture Organization report. The five organizations provided a breakdown of the ways animal agriculture contributes to greenhouse gas emissions, with PETA devoting the largest amount of space to the issue and problematizing animal agriculture in the greatest number of ways.

The organizations diverged, however, in their dietary recommendations in light of the connection between industrial animal agriculture and global climate change. Four of the six animal welfare/rights groups used animal agriculture's contribution to global climate change as leverage to promote vegetarian or vegan diets, yet only two of the groups—PETA and In Defense of Animals—specifically argued that vegetarianism and veganism were “significant” methods for combating global climate change. The World Society for the Protection of Animals and AAC instead argued that smaller-scale animal agriculture would be acceptable.

Three of the six groups, PETA, the Animal Alliance of Canada, and In Defense of Animals, specifically cited the *Livestock's Long Shadow* report. For

instance, the Animal Alliance of Canada mentioned the report in a witty article in its Spring/Summer 2007 newsletter, comparing the effect of cutting meat out of one's diet to driving a hybrid car. Some of the organizations also discussed a 2006 study by researchers at the University of Chicago that tested the environmental effects of five different diets and concluded that vegan diets do the least harm to the environment.

A particularly salient theme in the animal rights/welfare discourses surrounded allegations that environmental groups were not paying significant attention to the problem of industrial animal agriculture and global climate change. All the animal rights/welfare organizations, with the exception of the International Fund for Animal Welfare, made this claim. As part of this critique, PETA cited an exclusive interview with Paul McCartney in which they asked him, "What do you think about the fact that most major environmental organizations and the most prominent environmental advocates are omitting vegetarianism from their list of the top ways to help curtail global warming?" (People for the Ethical Treatment of Animals, 2008). McCartney responded that he thought it was very surprising, but "of course there are many powerful businesses which would wish to resist the idea" (People for the Ethical Treatment of Animals, 2008). As we will see next, however, nearly all the environmental organizations examined here did address the link between animal agriculture and global climate change.

Environmental Organizations

While five of the six environmental organizations made a connection between industrial animal agriculture and global climate change, their problematization of industrial animal agriculture did not significantly increase following the release of *Livestock's Long Shadow*; in fact, none of the organizations even cited the report in the materials analyzed here. Instead, the data used to support their assertions regarding global climate change and industrial animal agriculture generally came from reports written by the United Nation's Intergovernmental Panel on Climate Change (IPCC) and a report by Green Peace International. Several organizations cited the 2001 report released by IPCC's Working Group III, entitled *Mitigation of Climate Change*, which offers an in-depth analysis of the pros and cons of various approaches to mitigating climate change and contains a chapter dedicated to agriculture (Smith et al., 2007).

Another document, *Cool Farming: Climate Impacts of Agriculture and Mitigation Potential*, was cited by three of the organizations (David Suzuki Foundation, Sierra Club of Canada, and Green Peace International). This report, released in January 2008, was written by a lead author of the most recent

IPCC report, Pete Smith, and his research team, and was published by Green Peace International. It covers many of the same topics as *Livestock's Long Shadow*, examining how animal agriculture directly and indirectly contributes to greenhouse gas emissions—i.e., through farm operations, conversion of land to agriculture, and the production of agrochemicals (Bellarby, Foereid, Hastings, & Smith, 2008). The environmental organizations generally failed, however, to draw connections between all the aspects of industrial animal agriculture and global climate change. For instance, the organizations rarely listed animal agriculture as a contributor to deforestation, although they recognized deforestation as being the second-largest contributor to global climate change.

The five organizations that recognized a connection between industrial animal agriculture and global climate change (The Nature Conservancy, the Environmental Defense Fund, the David Suzuki Foundation, the Sierra Club of Canada, and Green Peace International) included dietary habits in their lists of actions individuals could take to reduce their carbon footprint. These organizations seemed to give equal weight to decreasing meat consumption and other tips they offered for mitigating global climate change. While some emphasized it more than others, every environmental organization (except Friends of the Earth International) agreed that individuals should eat less meat and consume more organic and locally grown food to benefit their health, as well as the environment (and these organizations did so before the release of *Livestock's Long Shadow*). They appeared to place more emphasis on consuming organic and locally grown food, however, rather than giving up meat: none of the organizations strongly advocated vegetarianism or veganism.

Industry Stakeholders

Of the two stakeholder organizations examined here, the American Meat Institute discussed matters related to the environment and global climate change more than the Canadian Meat Council did. The Canadian Meat Council made no mention of the environmental effects of animal agriculture, and it did not link animal agriculture to global climate change. The American Meat Institute did address the link between global climate change and animal agriculture; it mainly focused, however, on arguing against the use of ethanol as an alternative fuel. The American Meat Institute argued that ethanol (made from corn) is not a viable fuel source or means of mitigating global climate change, and it voiced concerns that the demand for corn to produce ethanol would drive the cost of the commodity up, subsequently increasing the cost of meat and potentially lowering demand.

The American Meat Institute did not address the link between animal agriculture and global climate change extensively. The organization cited the Environmental Protection Agency's assertion that at the present time 8 percent of anthropogenic sources of methane emissions are the result of livestock waste and that this number is expected to rise, given the trend toward larger farms (United States Environmental Protection Agency, 2008). It is important to note that this estimate is much more conservative than the one provided in *Livestock's Long Shadow*, which states that the livestock sector is responsible for 37 percent of anthropogenic sources of methane (Steinfeld et al., 2006). In response to its acknowledgment that the industry does have an effect on global climate change, the American Meat Institute suggests that participants in the US meat and poultry industries should fully comply with a variety of federal, state, and local environmental regulations, as well as a comprehensive set of voluntary environmental practices. One such practice is involvement in the AgStar Program, a voluntary program implemented by the Environmental Protection Agency, whereby farmers are encouraged to use biogas (methane recovery) technologies, which reduce emissions.²

While neither industry stakeholder group mentioned the *Livestock's Long Shadow* report, the American Meat Institute did mention the Food and Agriculture Organization's Conference on Climate Change, Bioenergy and Food, held in June 2008. It specifically cited the Food and Agriculture Organization Director General's critique of ethanol. Whereas the Food and Agriculture Organization's concern is primarily that ethanol takes food away from the hungry, however, the American Meat Institute expressed concern about its effect on meat producers.

Governmental Agencies

None of the governmental agencies investigated here (the US Environmental Protection Agency, Environment Canada, the US Department of Agriculture, and Agriculture and Agri-Food Canada) increased their problematization of industrial animal agriculture after the release of *Livestock's Long Shadow*. In fact, the Environmental Protection Agency was the only agency that specifically cited the report, though it only referenced the amount of methane that is produced through liquid holding tanks and lagoons for animal manure.

All the agencies referred to the IPCC on a variety of topics. The Environmental Protection Agency, for instance, used a 2007 IPCC report to discuss how global climate change affects agriculture (instead of the reverse). IPCC reports were used by the other agencies to discuss how agriculture contributes to the problem of global climate change. For instance, the USDA cited IPCC

data indicating that “over half of global annual emissions of CH₄ [methane] and roughly a third of global annual emissions of N₂O [nitrous oxide] are believed to derive from human sources, mainly from agriculture” (United States Department of Agriculture, 2004).

The governmental agencies’ positions on global climate change and agriculture were generally similar to each other. For instance, they all recognized carbon dioxide, methane, and nitrous oxide as the most important greenhouse gases, with carbon dioxide at the top. The main anthropogenic causes listed include the combustion of fossil fuel, with transportation and deforestation following. When discussing animal agriculture in the context of causes of global climate change, methane was identified as the key gas caused by manure and anaerobic fermentation, followed by nitrous oxide, because of fertilizer and pesticide use. There were, however, no comparisons made of emissions of greenhouse gases by industry (e.g., the automotive industry versus the agricultural industry).

While the agencies spent a great deal of time explaining how global climate change affects farming, they also detailed what farmers could do to reduce their emissions. The solutions offered include reducing emissions through conservation tillage and sequestering carbon, as well as using methane to generate energy for the farm. In discussing what individual citizens could do to cut their greenhouse emissions, however, the agencies notably did not mention dietary changes.

Newsprint Media

The keyword search using the Factiva database elicited 310 articles from *The Globe and Mail* and 76 from *USA Today*; approximately half of these were somewhat relevant and related to the topic at hand. Our analysis focuses on the most relevant items: 124 from *The Globe and Mail* and 46 from *USA Today*. In both newspapers, the largest number of articles related to global climate change and animal agriculture addressed biofuels, such as ethanol. They described increasing demand for ethanol and increasing competition for corn, as a result, among farmers, cattle ranchers, and the poor. Approximately the same number of articles in both papers focused on the burning of fossil fuels, energy use, and fuel for automobiles as the main global climate change culprits; and they commonly discussed alternative energy sources. Articles discussing biofuels and alternative energy sources account for about 39 percent of the articles analyzed in *The Globe and Mail* and *USA Today* combined. Fewer articles (approximately 10 percent of *The Globe and Mail* articles and 5 percent of the *USA Today* articles) discussed methane as an important greenhouse gas. These articles discussed either how animal manure contributed to

methane emissions or how the methane could be captured and turned into an alternative energy source.

Only one article in *USA Today* and five in *The Globe and Mail* indicated that global climate change could be mitigated through dietary changes. Further, there was not a significant increase in the number of articles problematizing industrial animal agriculture and global climate change after the release of the Food and Agriculture Organization report. In fact, *Livestock's Long Shadow* was only cited in two articles (Reynolds, 2007; Von Hahn, 2007), both in *The Globe and Mail*. These articles outlined the findings of the report, linking livestock production not only to methane emissions, but to carbon dioxide and nitrous oxide as well. The articles explained that methane and nitrous oxide are more potent gases than carbon dioxide. An additional article in *The Globe and Mail* from 2007 cited the University of Chicago study that found vegan diets to be the most environmentally friendly (Von Hahn, 2007, p. L3). The various reports and conferences by the IPCC were cited in 15 percent of the articles in both newspapers when discussing the anthropogenic causes of global climate change, but they did not directly link industrial animal agriculture to the problem.

It is noteworthy that few articles (approximately 10 percent of *The Globe and Mail* sample and 5 percent of the *USA Today* sample) articulated a connection between animal agriculture and global climate change, and none of these described all the ways in which industrial animal agriculture is implicated in global climate change, such as the production and transportation of animal feed. Manure was the main way that animal agriculture was linked to global climate change in the media discourses, and even it received little attention.

Discussion

Overall, these findings do not indicate that the link between industrial animal agriculture and global climate change should be described in Beck's terms as a "second modernity" risk. The research results indicate that the industry stakeholder groups have not lost their discursive power, which would be a critical indication of second modernity. There are indications, however, that the potential is there. The links that environmental and animal rights/welfare groups make between animal agriculture and global climate change might be indicative of the "increasing clamour" to alter the current definition of risks to which Beck refers. The industry stakeholders' silence in response to these claims and in the face of the Food and Agriculture Organization report might indicate that the clamor has not yet become loud enough to demand a

response, but this could change in the future. One might speculate that because large social movement groups, such as PETA, are pushing the issue and more mainstream groups, such as the David Suzuki Foundation, are recognizing a wider range of causes and effects of global climate change in relation to animal agriculture in particular, the effect may begin to trickle down through the other organizations and stakeholder groups, and a clamor sufficient enough to require a response from industry stakeholders could emerge. There are, however, reasons to believe that a vitriolic clamor might not develop any time soon.

What is evident is that while we are no longer in an industrialized period where risks are completely naturalized and predicted (i.e., the first modernity), the phenomenon under analysis here does not provide evidence that we are fully situated in a period of the second modernity. It may be the case that “rather than a single homogenous risk society, what we have at present is a series of risk societies, some of which share similar characteristics[;] others have specialized dynamics” (Mythen, 2007, p. 807). Extrapolating from this conceptualization, Mythen concludes that “a lack of global applicability is not reason enough to summarily dismiss the risk society thesis” (2007, p. 807).

Although this research does not provide evidence that we are fully situated in a period of second modernity, Beck’s conceptualizations of “risk conflicts” and “relations of definition” are useful in making sense of the findings. Beck (in Beck et al., 2004) contends that with globalized risks there is a lack of preconditions that help to rationalize and socially construct risk, and thus risk conflicts typically emerge. In relation to global climate change, uncertainty about its causes has given rise to a variety of risk conflicts among the organizations we investigated, with some depicting animal agriculture as more of a risk than others. We might infer, however, from the rather limited amount of explicit conflict and the fact that the animal agriculture stakeholder groups have not deemed it necessary to address seriously the link between industrial animal agriculture and global climate change, that the agricultural industry still holds a substantial amount of power over the construction of risk; thus the risk conflicts are not as drastic as we would expect if animal agriculture were being constructed as a second modernity risk.

In spite of relatively limited explicit risk conflicts, differing “relations of definitions” (Beck, 2002) are apparent within and among the stakeholder groups examined. Notably, stakeholders adopt varying “relations of definition” vis-à-vis the different aspects of industrial animal agriculture’s contribution to global climate change. For instance, the social movement groups covered most of the ways that animal agriculture contributes to global climate change, whereas government and industry stakeholders acknowledged only

some areas (e.g., the ways that animals contribute to methane emissions). Newspapers incorporated a wide range of topics related to global climate change, but none of the articles addressed all the ways that industrial animal agriculture contributes to global climate change. Meat industry stakeholders chose to ignore some of the ways their industry contributes to environmental harms such as global climate change, yet they reported being concerned about other environmental issues. And by defining some things, such as biofuels, as environmental risks, industry stakeholders may have been able discursively to limit the construction of their own practices as harmful.

Divergent “relations of definition” (Beck, 2002) were also observed within the categories of stakeholder groups examined. For instance, while five of the six animal rights/welfare groups framed industrial animal agriculture as a cause of global climate change, the organizations addressed the issues and proposed solutions in different ways. All the groups (except the International Fund for Animal Welfare) promoted eating less meat as a way to mitigate global climate change. Only some of them argued that meat consumption should be completely eliminated, however, while others (e.g., the Animal Alliance of Canada) argued that eating less meat would be adequate.

It should be noted that in the material we examined there were no direct attempts to contradict the definition of industrial animal agriculture as a risk to the global climate, nor were there claims that the scientific data used in *Livestock's Long Shadow* were incorrect. Some of the stakeholder groups did, however, critique the “relations of definition” that other groups had allegedly proposed. For instance, PETA argued that environmental groups were ignoring the risk posed by industrial animal agriculture to the global climate. Based on the data from the environmental organizations examined here, however, PETA's claim does not appear to be accurate: all the groups except Friends of the Earth International addressed the issue of the link between industrial animal agriculture and global climate change.

PETA also critiqued the US government, arguing that it had a vested interest in not defining industrial animal agriculture as a risk to the global climate. PETA claimed, for instance, that the United States Department of Agriculture and the Environmental Protection Agency have been corrupted and that campaign contributions from the meat industry influence elected officials' decisions regarding the appointment of high-ranking positions in the USDA and the EPA. They further argued that government officials who ensure industry-friendly practices are often rewarded with industry jobs once they leave office (People for the Ethical Treatment of Animals, n.d.). Based on the findings of this research, it would appear that these agencies are downplaying the link between animal agriculture and global climate change. While there is some

problematization of animal agriculture because of methane emissions, the agencies failed to link industrial animal agriculture directly to carbon dioxide emissions from transportation and feed crops. While it is impossible, based on these findings, to say definitively that industry stakeholders are influencing government agencies to downplay the link between industrial animal agriculture and global climate change, the findings are consistent with research that has documented a long history of the agriculture industry, particularly the meat industry, influencing government (see, for example, Gawande, 2005; Nestle, 2002; Hansen, 1991).

The meat industry, however, may hold less influence over social movement groups and the media. While there was only a slight increase in newspaper articles connecting animal agriculture to global climate change after the publication of *Livestock's Long Shadow*, two articles (both in *The Globe and Mail*) specifically mentioned the report. The article entitled "Ignoring the Meat of the Global Warming Issue" would not have made it to the pages of *The Globe and Mail* if the meat industry were exerting total influence. While the article linked the animal agriculture industry to methane and nitrous oxide emissions, however, it failed to make a link to carbon and the effects of transportation and deforestation. The omitted details are precisely the ones that the Food and Agriculture Organization report makes clear. Perhaps these factors were not mentioned because they are indirect effects, although they are certainly substantial. It is also possible that not all the links are being drawn because doing so would lay bare the Food and Agriculture Organization report's findings that the industrial animal agriculture is responsible for more greenhouse gas emissions than the worldwide transportation sector.³ The failure of the newsprint media, governmental agencies, and industry stakeholders to identify all the links between industrial animal agriculture and global climate change, coupled with the failure to report that industrial animal agriculture contributes more to global climate change than the transportation sector, is likely not entirely attributable to a dearth of knowledge and may instead indicate a reluctance to do so.

In a November 2007 *USA Today* article, a reporter discussed a commonly touted solution to global climate change: turning off lights. The author remarked that not only is sitting in the dark an inadequate response to global climate change, but "Americans don't like to limit ourselves, period" (Vanderkam, 2007). This may be another reason, in addition to the power exerted by meat industry stakeholders, why the risk posed by industrial animal agriculture to the global climate has not received more attention, especially since the release of the Food and Agriculture Organization report: the most obvious implication of acknowledging the risk posed would be that the con-

sumption of industrially produced meat should be reduced, if not eliminated. In other words, it provides evidence that the answer to the question of whether one can consume meat and be an environmentalist posed at the beginning of this paper is “no”—given current methods of meat production. This is a message that stakeholders in this case (with the exception of the animal rights/welfare groups) are aware that their constituencies and other consumers will not want to hear. Thus, for now at least, this issue could have relatively weak cultural resonance, making it less likely to be taken up by the media and the social movement organizations that depend upon the media to disseminate their messages (see Doyle, 1994; Hansen, 1991). The cultural resonance of a message, however, is fluid and may change with time.

This study is limited in that it is only able to assess discourse over a relatively short time period after the release of *Livestock's Long Shadow*. Future research could examine the report's more long-term effects and how the cultural resonance of the issue shifts over time. The study is also limited by its reliance on publicly available texts archived on websites. Future research examining how stakeholder groups make decisions about how to address the climate change risk posed by industrial animal agriculture, or whether to address it at all, would also be useful in understanding the construction of risks. The study is also limited in that we could only examine a few animal advocacy and environmental groups, and we focused on newsprint media in the United States and Canada. Further research might examine the positions of other animal advocacy and environmental groups and examine newsprint and perhaps other forms of media in other countries, where the cultural resonance of this issue may be qualitatively different. Finally, further research is needed to understand the origins of the *Livestock's Long Shadow* report and how the authors and the Food and Agriculture Organization came to focus on industrial animal agriculture as a risk in the first place.

Conclusion

This paper has examined the discourses of a variety of stakeholders regarding global climate change to determine whether and how they construct industrial animal agriculture as posing a risk, and whether these discourses have shifted since the release of the Food and Agriculture Organization's *Livestock's Long Shadow* report. We conclude that the organizations examined differ in their methods and in the extent to which they address the problem of animal agriculture's contribution to global climate change, with some not acknowledging it at all.

We used Beck's concepts of "risk conflicts" and "relations of definition" to examine whether and how organizations constructed industrial animal agriculture as a risk and how these definitions conflicted. The animal welfare/rights groups by and large constructed industrial animal agriculture as a risk to the global climate and integrated it into their campaigns to promote vegetarian and/or vegan diets. Most of the environmental organizations also defined industrial animal agriculture as constituting a risk and encouraged dietary changes, albeit ones often not as drastic as those recommended by the animal rights/welfare groups.

The construction of risk shifted with the industry stakeholders, as neither of them identified industrial animal agriculture as a prominent risk for global climate change. Instead, they constructed biofuels, such as ethanol, as a risk. Governmental agencies also did not fully recognize industrial animal agriculture's contribution to global climate change. Instead, they constructed risk mainly through the link between the meat industry and methane and nitrous oxide emissions, largely neglecting the industry's carbon dioxide emissions. The media were a bit more progressive in this regard: although they focused on alternative fuels, they constructed risk in a more inclusive way by examining a variety of topics relating to global climate change, some of which touched on the risk posed by animal agriculture to global climate change.

While this case is not (yet) illustrative of the second modernity as articulated by Beck, there is evidence to suggest that in time it could be. The American Meat Institute and the governmental agencies did acknowledge the risk posed by the industrial animal agriculture industry to global climate change, as did the media and most of the social movement organizations. In many cases, however, only the direct effects of the industry were acknowledged, and the more insidious indirect effects (which make it a greater contributor to global climate change than the transportation sector) were overlooked. Thus, while we may be witnessing some slippage, we cannot conclude that industry stakeholders have lost their power to control the construction of this risk. Furthermore, the industry stakeholders' power to construct this risk may be augmented in this case by an unwillingness among other stakeholders and consumers to confront the fact that industrial animal agriculture contributes more to global climate change than the transportation sector, because doing so would challenge the sustainability of current dietary habits. In conclusion, while the problematization of animal agriculture's contribution to global climate change has been acknowledged by a number of stakeholder groups, for the most part it has not increased since the release of *Livestock's Long Shadow*. The extent to which the cultural resonance of this industrial risk and the power of stakeholders to rationalize it may change over time remains to be seen.

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Notes

1. To be exact, the following strings of search terms were used: "(Livestock's Long Shadow OR global climate change OR global warming OR climate change) AND (animal OR agriculture OR livestock OR farm OR agribusiness)."
2. Furthermore, the American Meat Institute developed the Environmental Management System, another voluntary program that helps organizations minimize production costs, make efficient use of energy and natural resources, minimize product waste, and regulate their environmental compliance, supposedly managing a company's environmental footprint.
3. Accusations that the news media are biased in favor of dominant social forces, institutions, and classes, which limits their coverage of important issues, are not new (see Ricchiardi, 2008; Anderson, 2006).

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