Intensive Hog Farming in Manitoba: Transnational Treadmills and Local Conflicts*

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L'exploitation intensive des porcheries a connu un essor rapide dans l'Ouest canadien. La croissance de l'agriculture industrielle porcine manitobaine est analysée comme une étude de cas d'un « tapis roulant de production transnational ». La production et les exportations ont augmenté de façon considérable alors que l'industrie est devenue plus concentrée; mais des coûts environnementaux, entre autres des préoccupations quant aux odeurs et à la qualité de l'eau, sont devenus plus visibles. Les gouvernements provinciaux ont encouragé, par des politiques néolibérales, l'expansion de cette industrie et ont hésité à imposer des exigences réglementaires. Le processus d'approbation des porcheries a été en grande partie ramené au niveau des municipalités rurales. Il reste que cela s'est traduit en une controverse politique acharnée dans plusieurs collectivités locales, ce qui a forcé le gouvernement du Manitoba à étudier une réglementation plus rigoureuse dans ce secteur d'activité.

Intensive hog operations have grown at a rapid rate in Western Canada. The growth of factory hog farming in Manitoba is analysed as a case study of a “transnational treadmill of production.” Output and exports have increased dramatically and the industry has become more concentrated, but negative environmental externalities, notably odour and water-quality concerns, have become more visible. Provincial governments have promoted the expansion of this industry through neo-liberal policies and have been reluctant to impose regulatory restrictions. The hog barn approval process has been largely downloaded to the rural municipal level. However, this has resulted in fierce political controversy in many local communities, which has forced the Manitoba government to consider more active regulation of hog factory farms.

THE TRAGEDY IN WALKERTON, ONTARIO, and growing fears of water contamination in other parts of rural Canada, have added to the debate about intensive livestock operations (ILOs) designed for the large-

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scale factory farming of animals (Edwards and Ladd, 2000; Thu, 1996; Thu and Durrenberger, 1994; Durning and Brough, 1991). The expansion of ILOs is part of the transition to a new food regime characterized by large concentrated units, technologically sophisticated supply chains, vertical integration and production of a specialized commodity for global markets (Friedman, 1991; 1998; Hamilton, 1994; Goodman and Redclift, 1991). Critics of industrialized agribusiness (Berry, 1991; Kenney, 1991) have raised concerns about the environmental sustainability of this food regime in regards to air, water and soil quality, as well as threats to human health. ILOs produce an added challenge to sustainability with their requirements for the assimilation of vast quantities of animal waste (Durning and Brough, 1991).

Factory farming and corporate concentration in agriculture pose the question of which governance strategies may best be employed to ensure that these operations are regulated in the public interest. Canadian provinces and rural municipalities, similar to other localities faced with homogenizing market pressures (Sachs, 1999), have been placed in a political quandary—internally divided on the issue of ILOs and lacking sufficient information or jurisdictional authority to practise effective environmental democracy. Giddens (1990) has outlined a process of “disembedding” (see Granovetter, 1985), under which economic activities become separated from the social bonds of local communities and then recombined across larger units of time and space. If ILOs have grown rapidly in the global economy, becoming disembedded from normative mechanisms that could regulate agricultural activities, the question becomes: Can we find a way to collectively re-regulate them?

This paper will examine the problem of ILO pollution and its regulation with a focus on the province of Manitoba, the site over the past decade of Canada’s fastest growing intensive hog industry. It will be analysed as a case study of the “treadmill of production” (Schnaiberg and Gould, 1994; Gould, Schnaiberg and Weinberg, 1996) in livestock agriculture, which is characterized by the expansion of large and highly concentrated production units. The tendency toward economic concentration, vertical integration and corporate ownership (Edwards and Ladd, 2000; Thu, 1996; Goodman and Redclift, 1991) has been underway at the expense of smaller scale, less specialized operations. This expansion has resulted in growing environmental impact—the “negative externalities of a production treadmill” (Bell, 1998: 78)—from intensive hog farming. Hog wastes may be responsible for nitrate leaching and phosphorus runoff in water, as well as the release of harmful pathogens and offensive odours (Mussel and Martin, 2000). The environment acts as a sewer (Redclift, 1996; Yearley, 1996) for the waste products of industrialized food production and the effects are differentially distributed. The increasing visibility of environmental concerns poses the question of state actions. Deregulation and neo-liberal agricultural policies (De Lind, 1995; Thu, 1995) instituted to
accelerate the treadmill have led to the downloading of much of the responsibility for ILO governance onto rural municipalities. The resulting conflicts over hog barns at the local level have underlined the state’s contradictory role as development promoter and environmental regulator (Schnaiberg and Gould, 1994; Cable and Cable, 1995). Thus, this paper will also be concerned with the state’s problematic efforts to construct legitimation frameworks (Hall, 1998) to manage this contradiction.

Methodology

Information for this paper has been collected from heterogeneous sources, which is necessary because there is no central source of information on the hog industry in Manitoba. Documentation on the pork industry has been obtained from government documents by means of the extensive network of provincial libraries. The public registry file of Manitoba Conservation has been the most important source of documentation. Much information has been obtained from newspapers and magazines, especially the rural and agricultural press. Many of these articles are accessible on-line. Interviews were conducted with 30 persons connected with the pork industry either as developers, regulators or environmental opponents. This includes officials from the provincial departments of Agriculture, Conservation and Intergovernmental Affairs. These interviews were conducted in person or on the telephone. All interviews were conducted in a semi-structured format in which standardized questions were combined with ample opportunities for subjects to express their own opinions about the matters under discussion. Detailed notes were taken during each interview. Finally, I attended hearings on Manitoba’s Livestock Stewardship Initiative, municipal council meetings, and environmental gatherings dealing with the hog industry in various parts of the province.

Manitoba’s Hog Industry

Manitoba has been an important part of the “wheat economy” (Fowke, 1957) that dominated economic life in the Canadian prairies throughout much of the last century. During the final quarter of the twentieth century, Western Canada’s grain economy has undergone a secular decline, from which there is little prospect of recovery (Qualman, 2000). Between 1971 and 1996, the number of Manitobans who lived on farms declined from over 131,000 to less than 80,000, while the proportion of Manitobans employed on farms dropped from 13% to 7% (Livestock Stewardship Panel, 2000). A key factor behind this decline has been depressed prices and the crisis of profitability (Hall, 1998; Goodman and Redclift, 1991) in world grain markets. Also, railway deregulation has led to much higher grain shipping costs. Faced with low prices and high freight rates, producers were encouraged to transform comparative weakness into comparative
advantage by converting cheap grain into feed inputs for the burgeoning hog sector. The provincial government and agribusiness interests began to stress the “Manitoba advantage” based on calculations that showed the Canadian prairies to be among the most advantageous places in the world to raise hogs (Martin et al., 1999). The ingredients were low costs for feed grain, a vast acreage (13.3 million acres in Manitoba) under cultivation and available for waste assimilation, and pro-business attitudes (Manitoba Agriculture and Food, n.d.). Pork producers from Northern Europe to North Carolina facing environmental and regulatory constraints were welcomed to Manitoba’s greener pastures. Pork industry advocates claimed that Manitoba would benefit from value-added production and globalized export markets (Manitoba Agriculture and Food, n.d.). Shipping meat would be more economically advantageous than merely shipping grain and manure would replace chemical fertilizer with a natural alternative, producing a self-sustaining industry.

The expansion of Manitoba’s hog industry only makes sense in the context of the globalization of agricultural organization and trade. World pork imports tripled between 1981 and 1999 while Canada’s small domestic market stagnated (Martin et al., 1999). Canadian producers are counting on rising incomes and the adoption of a meat-saturated diet (Agriculture and Agrifood Canada, 1997), especially in Asia, the world’s largest pork importer, to underpin their growth. There is a window of opportunity because some of the world’s leading pork-producing areas—notably Denmark, the Netherlands, North Carolina and Taiwan—are now facing severe environmental limits on production (Martin et al., 1999). Western Canada’s new role in the global food regime is to specialize in the feed grain/livestock production/waste assimilation end of the food chain. This represents an acceleration of the “treadmill of production” (Schnaiberg and Gould, 1994) for prairie agriculture, one that is characterized by a diminishing number of producers engaged in much larger scale and more intensive farming practices. Food production is maintained in Western Canada, but at the cost of subjecting the land and water to risk from widespread livestock manure application. The concept of the “treadmill of production” has been extended up to the global and down to the local level in its most recent formulation as a “transnational treadmill” (Gould, Schnaiberg and Weinberg, 1996) in which nations and regions compete for jobs and investment in the context of global capital mobility. This could provide some perspective on the willingness of many communities in Western Canada and elsewhere to court investment from the international livestock industry by taking on the waste assimilation risks.

During the 1990s, the Manitoba advantage appeared to be on track as Manitoba had the fastest growing hog industry in Canada (Livestock Stewardship Panel, 2000). It surpassed Alberta as Canada’s third largest producer, after Quebec and Ontario. Market hog production in Manitoba has been increasing by 12% annually and exceeded 5 million
hogs by 2000. Indeed, hogs surpassed both wheat and canola to become the leading source of revenue for Manitoba farmers (Rampton, 2000). Maple Leaf Foods, an offshoot of the McCain's agrifood empire, completed construction of Canada's biggest packing plant in Brandon, which has the capacity to slaughter 90,000 hogs per week. Maple Leaf also took a giant step towards vertical integration of the supply chain with the acquisition of Landmark Feeds, Western Canada's largest livestock feed manufacturer and Elite Swine, Canada's second largest corporate hog producer. U.S.-based Smithfield, the world's largest pork producer, bought Schneiders, a Canadian meat packer with substantial slaughter capacity in Manitoba. Hog industry boosters predicted a further doubling of production to 10 million hogs annually (Falding, 2000). Alarmed, hog industry opponents, grouped in a loose coalition called Hogwatch Manitoba, invoked fears of a flood-prone province awash in a sea of manure\(^1\) and called for a moratorium on new barns.\(^2\)

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**Table 1**

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Pig Farms, Manitoba</th>
<th>Average Number of Pigs per Farm, Manitoba</th>
<th>Average Number of Pigs per Farm, Canada</th>
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<tbody>
<tr>
<td>1981</td>
<td>5098</td>
<td>172</td>
<td>177</td>
</tr>
<tr>
<td>1986</td>
<td>3563</td>
<td>301</td>
<td>268</td>
</tr>
<tr>
<td>1991</td>
<td>2969</td>
<td>434</td>
<td>345</td>
</tr>
<tr>
<td>1996</td>
<td>2064</td>
<td>861</td>
<td>523</td>
</tr>
<tr>
<td>2000</td>
<td>1430</td>
<td>1354</td>
<td>884</td>
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Source: Statistics Canada, 2001

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1. The debate on “hog density” has to do with how many hogs—and potentially how much manure—are produced in a given area. While Manitoba has about 13 million acres under cultivation, more than half the hogs are produced in three agricultural zones in southeastern and southcentral Manitoba comprising about three million acres (Statistics Canada, 1997). Some estimates suggest that the municipalities with the most concentrated production, such as Hanover in southeastern Manitoba, have a “hog density” equivalent to the highest levels found in Europe or the U.S. (Falding, 2000).

2. Quebec, Canada’s largest pork producer, announced curbs on hog industry expansion in 165 rural municipalities. The moratorium is in response to widespread odour and water-quality problems.
Table 2

Number of Pigs on Farms by Herd Size, Manitoba, 1981-2000

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<tbody>
<tr>
<td>1-77 Head</td>
<td>56</td>
<td>34</td>
<td>25</td>
<td>19</td>
<td>7</td>
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<tr>
<td>78-272 Head</td>
<td>151</td>
<td>129</td>
<td>104</td>
<td>58</td>
<td>49</td>
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<tr>
<td>273-527 Head</td>
<td>166</td>
<td>184</td>
<td>168</td>
<td>131</td>
<td>76</td>
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<td>528-1127 Head</td>
<td>164</td>
<td>226</td>
<td>252</td>
<td>266</td>
<td>212</td>
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<tr>
<td>1128-2652 Head</td>
<td>115</td>
<td>122</td>
<td>161</td>
<td>288</td>
<td>332</td>
</tr>
<tr>
<td>2653-4684 Head</td>
<td>158</td>
<td>209</td>
<td>192</td>
<td>308</td>
<td>278</td>
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<tr>
<td>4685 Head and Over</td>
<td>60</td>
<td>163</td>
<td>383</td>
<td>818</td>
<td>979</td>
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<tr>
<td>Total</td>
<td>874</td>
<td>1071</td>
<td>1287</td>
<td>1809</td>
<td>1,935</td>
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% of Pigs on Largest Farms, Manitoba

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<tr>
<td>% of Pigs on</td>
<td>6.9</td>
<td>15.2</td>
<td>29.7</td>
<td>43.2</td>
<td>50.6</td>
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<td>Largest Farms,</td>
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<td>Manitoba</td>
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% of Pigs on Largest Farms, Canada

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<tr>
<td>% of Pigs on</td>
<td>5.9</td>
<td>7.5</td>
<td>10.9</td>
<td>26.1</td>
<td>34.3</td>
</tr>
<tr>
<td>Largest Farms,</td>
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<td>Canada</td>
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Source: Statistics Canada, 2001

Behind the growth of Manitoba's hog production is a change in industrial composition. Following trends in Europe and the U.S., it has become far more concentrated and vertically integrated. Between 1986 and 2000, while the number of hogs in Manitoba almost doubled, hog farms declined by more than half from 3563 to 1430 and the average number of hogs per farm more than quadrupled from 301 to 1354 head (Table 1). The 99 largest hog farms, with an average of about 10,000 head each, now account for over 50% of Manitoba production (Table 2). Farms of that size accounted for only 15% of Manitoba output in 1986. Corporate operations are also a big part of the picture—about 40% of Manitoba production (Marbery, 2000). Although many hog barns are directly owned by large corporations,
“vertical co-ordination,” rather than vertical integration, is probably the dominant trend (Manitoba Pork Study Committee, 1994). In this model, corporations contract with farm proprietors to supply an array of goods and services, including hogs, feed, antibiotics, veterinary services and even the climate-controlled structures in which the hogs spend their short lives. The farmer is heavily dependent on the management company to provide the inputs necessary for the supply chain and to market the finished product. The farmer provides the site and labour and, most importantly, the land on which the liquid waste must be spread. Three of the ten largest hog production companies in Canada are now based in Manitoba (Freese, 2000), while a fourth has major operations there.  

The hog industry has become disembedded from normative structures, which were established to regulate Western Canadian agriculture during the last century, and has pursued more explicitly market-based strategies. The new mode of organization based on concentrated factory farming and globalized markets can be conceptualized, following the work of Lipietz (1987; 1992), as part of the transition from Fordist to post-Fordist food regimes (Kenney et al., 1991; Friedman, 1998). In the Fordist regime, government regulation of supply and pooling of output allow a relatively large number of agricultural producers some protection from market uncertainties. The post-Fordist regime, on the other hand, privileges deregulated markets, concentrated production and industrial methods such as ILOs and biotechnology. The Canadian regulatory model was established along Fordist lines by the middle of the last century with the Canadian Wheat Board, a federal agency, monopolizing international grain sales, while the giant prairie agricultural co-operatives dominated grain handling. The model was extended from grain to other commodities, including pork, which in Manitoba came under an exclusive, provincial marketing monopoly, Manitoba Pork, which engaged in “single-desk selling.”

This arrangement was seen as beneficial for the smaller producers, since it provided them with a collective marketing channel (Rampton, 1999). The larger producers, increasingly influential in the industry, lobbied against it, arguing that they could carry out more effective marketing on their own. A provincial government commission (Manitoba Pork Study Committee, 1994) that studied the issue found that Manitoba Pork was blocking the growth of an industry characterized by concentrated production and transnational marketing. The provincial government agreed and, in a series of restructuring moves in the 1990s, ended Manitoba Pork’s marketing monopoly (Rampton, 1999). Manitoba Pork was transformed into the Manitoba Pork Council, an industry-lobbying group that repre-

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3. Elite Swine (a subsidiary of Maple Leaf Foods) of Landmark, Manitoba, with 58,600 sows is the second largest corporate hog producer in Canada after Quebec-based Cooperative fédrée; other Manitoba companies on the top ten list are Puratone of Niverville with 23,000 sows and Hytek of La Broquerie with 20,000 sows. Premium Pork with 26,000 sows is based in Lucan, Ontario, but has substantial operations in Manitoba (Freese, 2000).
sented the largest producers and would play a major role in the industry’s public relations battles with environmental opponents. Deregulation was seen as a victory for the big producers, processors and corporate investors, who were now free to carry out their business unrestrained by any need to “co-operate” with their smaller counterparts (Rampton, 1999). However, deregulation was bitterly opposed by many of the smaller producers, who became vulnerable to the pressures exerted by the big corporate supply and processing networks (Bell, 1999). Dwindling in numbers and influence, they could be ignored. The neo-liberal approach to farm policy complemented the treadmill of production in the prairie livestock sector and permitted the hog industry, dominated by the largest producers, to expand rapidly.

(De)regulation and the Right to Farm

Deregulation was also implemented in the environmental field to protect ILOs from many of the consequences associated with the negative externalities of their rapid growth. Odour concerns fuelled the earliest environmental resistance to pig farms. In the early 1970s, when Manitoba’s hog industry raised fewer than one quarter the hogs it does today, a legal case—Lisoway versus Springfield Hog Ranch—achieved widespread publicity and raised many of the issues that still remain unresolved. A Winnipeg family had purchased an exurban residence; however, the adjacent property was subsequently purchased by two businessmen who established a 2000-head operation. While not large by today’s standards, it would have been substantial in the Manitoba of 30 years ago. The technology used has since become fairly standard in the industry: the pigs were housed in a series of confinements with slatted floors, the waste was flushed with water into open storage pits and then applied to the defendant’s fields. The plaintiffs’ complaints will sound familiar to critics of intensive hog operations: poorly constructed sewage pits, fields drenched in pig slurry and, above all, an overpowering stench that prevented the plaintiffs from enjoying the amenities of their property. The plaintiffs launched a complaint to the Manitoba Clean Environment Commission, the provincial agency charged with environmental regulation, as well as a civil lawsuit. In 1971, after a full-scale hearing, the Clean Environment Commission found for the plaintiff. The victory was short-lived. In 1973, the Manitoba government issued an order-in-council exempting livestock operations from the Clean Environment Act, citing the lack of “scientific knowledge concerning the control of odours” (Wilson, 1975: 21). The plaintiffs were also victorious in their civil suit. A 1975 judgment found the defendants liable for “nuisance to the plaintiffs by reason of offensive odours” (23) and forced them to pay damages. In 1976, the Manitoba government responded with the Nuisance Act, which restricted the right of plaintiffs to sue for nuisance.
The Lisoway case established a template for environmental claims making that has played a role in socially constructing debates on the hog industry ever since. Pigs produce large volumes of manure, estimated at two to five times the equivalent volume for humans (Fallding, 2000). It must be stored, usually in earthen lagoons, and then applied to the land (Manitoba Agriculture, 1995). A comparatively small, 600-sow farrow-to-finish operation will produce more than three million gallons of liquified waste annually (Tessier, n.d.). The manure contains large quantities of nitrogen, ammonia and phosphorus. Conventional means of storing, such as lagoons, or spreading, such as irrigation guns, end up displacing much of the nutrient content into the air—as much as 80% in some cases—due to ammonia-nitrogen volatilization (Jackson, 1998). This is a major source of the odour problem. It represents the “unpaid waste cost” (Murphy, 1994: 111) that becomes a point of contestation. Who is responsible for it and who pays for it? What mechanisms will be relied upon to decide these questions?

Public officials resisted having to take seriously claims of significant environmental damage resulting from large-scale swine production. Scientific validation of an environmental claim is usually crucial if that claim is to be successfully advanced in the public arena (Hannigan, 1995; Yearley, 1991). Concerns about odour, the major complaint lodged against big piggeries, could always be dismissed on the grounds that they were subjective and outside the bounds of scientific standards (but see Schiffman, 1998). Reviewing a number of U.S. studies dealing with community responses to the odour problems associated with large-scale hog enterprises, Thu (1995) notes the political use of the term “subjective” to counter health and quality-of-life concerns in order to avoid liability: “To characterize a class of phenomena as subjective is to remove them from the realm of rational discourse and thus of legitimization” (Thu, 1995: 74). Partly as a result, environmental authorities in Manitoba and elsewhere in Canada have been slow to place ILOs under any kind of effective regulation.

While governments were quick to reject environmental claims against hog barns, nuisance claims continued to be advanced in the courts. Agriculture interests strongly lobbied government that they should not be subject to nuisance lawsuits merely for carrying on what they defined as “normal” pursuits (Webster, 1987). By the 1990s, most Canadian provinces had passed legislation, following the lead of Manitoba and Quebec, which protects farmers from litigation under the common law of nuisance. In 1994, Manitoba proclaimed the Farm Practices Protection Act, which upheld the principle of legal protection from lawsuits and established mediation by a review panel in disputes arising from livestock odours. The growing prevalence of “right to farm” (De Lind, 1995) legislation highlights the hog industry’s counterclaim that farmers should not be constrained from carrying out normal agricultural practices, especially
by non-farmers who purchase rural property. Environmental critics were portrayed as anti-agricultural zealots who would deprive legitimate farmers of their right to earn a living (Webster, 1987). Passage of “right to farm” legislation, in Manitoba as elsewhere, served to legitimize the actions of the provincial government in throwing its support behind the expansion of ILOs. As De Lind has observed, “Behind ‘right to farm’ rhetoric the state permitted agribusiness to consolidate and externalize its control of communities, resources and economies” (De Lind, 1995: 41). The need for legitimation, in O'Connor's (1973) influential analysis, stems from the contradictory state functions of economic growth and social consensus. Environmental sociologists (Gould, Schnaiberg and Weinberg, 1996; Cable and Cable, 1995) have interpreted this contradiction in the light of government's dual role as development promoter and environmental regulator. Governments have tended to come down on the side of the economic growth and job creation necessary to keep treadmills operating, but these decisions require justification. “Right to farm” served as the environmental equivalent of economic deregulation. By adopting it as policy, the provincial government could disarm critics by portraying itself as a defender of agriculture against those who would launch nuisance lawsuits or spurious environmental claims.

“Right to farm” legislation proved only partially successful as a legitimation device supporting ILO expansion. Cutting off the right to sue did not end the controversy over nuisance, but only transferred it to the political arena. Complaints of nuisance odours from ILOs continued unabated (Manitoba Clean Environment Commission, 1979). In 1978, a new provincial government authorized the Manitoba Clean Environment Commission to conduct an investigation of ILOs with a view to developing regulations to address public concerns. The subsequent report (Manitoba Clean Environment Commission, 1979) focussed on “large confinement ILOs” that, in some strongly worded language, were described as “out of balance with nature because of the very large amounts of waste being produced on restricted areas of land” (Manitoba Clean Environment Commission, 1979: 3). The suggested remedies were relatively mild. The Commission concluded that ILOs should come under environmental legislation and proposed a new set of regulations for livestock based on the animal unit (AU) standard. Animal units are a measure of the average amount of nitrogen—a potential pollutant—a species produces in its manure: dairy cows produce 2.0 AU, sows 1.25 AU and broiler chickens 0.005 AU. Any operation over 300 AU was to file a manure management plan, which would include the storage structure, the means of spreading and the land area to be covered. This was a tentative step toward shifting more of the waste cost equation to the producer. The question of whether odours constitute an environmental contaminant proved much more difficult to resolve. After hearing conflicting testimony on the subject, the Commission concluded that odours could not be scientifically measured.
and did not represent a threat to the environment and public health. The Commission did agree that they were a nuisance and that odour control could best be achieved by land-use planning to maintain minimum separation distances between ILOs and nearby residences (Manitoba Clean Environment Commission, 1979: 5). Accordingly, the Commission recommended that the province’s rural municipalities be assigned the responsibility of developing land-use plans to minimize conflicts between ILOs and residents.

The Manitoba government accepted the two-track system for regulating ILOs that is now enshrined as policy in most Canadian provinces. One track of the system is the environmental regulations codified in the Manure and Mortalities Regulation. Since 1994, all new or expanded ILOs of 400 AU or more (to exempt smaller operations, the government raised the regulatory threshold from 300 to 400 AU) must submit a manure management plan and undergo an inspection of their manure storage structures. Since 2000, all ILO proposals of that size must undergo a technical review—in effect, a mini environmental review—carried out by provincial government personnel. Manitoba regulations are not dissimilar to other North American jurisdictions; they chip away at the unconstrained property rights contained in earlier notions of the “right to farm.” However, there is a substantial literature on the uncertainties and contradictions of state environmental regulation (Torgerson, 1999; Dryzek, 1997; Weale, 1992) Governments are usually reluctant to impose costs or restrictions on businesses that may jeopardize opportunities for economic growth and profits. Even when some regulations are enacted, monitoring and enforcement tend to lag behind the intent of regulatory policy contributing to an “implementation deficit” (Weale, 1992).

This has largely been the case in Manitoba. A recent provincial inquiry panel (Livestock Stewardship Panel, 2000) found that knowledge of manure management by hog barn operators and compliance with guidelines are inadequate. Inspection and soil testing of fields to which manure has been applied are problematic, with only about 10% of the land tested regularly. There is also widespread anecdotal evidence of non-compliance. For example, there have been numerous reports of winter spreading of manure, which is forbidden for operations larger than 400 AU. One activist stated that he has stopped reporting such incidents to Manitoba Conservation because “the last time I phoned in a complaint they told me unless I got it on videotape there was nothing they could do about it.” Part of the problem is the inadequacy of the enforcement effort devoted to the livestock regulations compared to the task at hand. In 2001, Manitoba Conservation had eleven inspectors to carry out enforcement of the Manure and Mortalities Regulation. They are not only responsible for regulating hog barns but also all other livestock producers (there are 12,000 beef cattle producers alone in the much smaller and less concentrated beef industry). Furthermore, all facilities that were constructed prior to 1994,
when the current regulations were introduced, do not come under full regulatory review. There are about 50 annual enforcement/compliance orders under the Manure and Mortalities Regulation, the majority for violations of manure handling or water quality standards (Manitoba Conservation, 2000). Most of these orders are warnings without fines or other penalties. Similarly, not a single technical review has recommended rejection of a hog barn proposal. Interviews with the frontline inspectors who actually carry out the livestock regulations indicate that, given a shortage of resources, unless producers are voluntarily compliant there is only a limited amount they can do about it.

The "implementation deficit" was not the only problem with the Manitoba livestock regulations. Odour, the highly controversial and politically charged source of opposition to ILOs, was outside their jurisdiction. Instead, the provincial government accepted the Commission’s recommendations and delegated responsibility to the rural municipalities to use their authority over land use under the Planning Act to decide what could be built and where, based on local preferences and local conditions. This decision can be linked to the debate on the imagination and fabrication of "communities" (Etzioni, 1996; Rose, 1996) to deal with problems that other levels of government cannot or will not tackle. Along with the rise of neo-liberalism has come a shifting of the focus of responsibility from governments to communities. The second track of the regulatory system—the extremely divisive question of where large-scale factory farms would be built—was downloaded to the community level. There are some good reasons, however, for doubting whether Manitoba’s rural communities were prepared for the responsibility that was thrust upon them.

Community Polarization

In 1982, at the start of Manitoba’s hog boom, few of the province’s towns, villages and rural municipalities practised development planning. In that year, 33 of 201 municipalities reported full or partial development plans, while only eight reported zoning by-laws, the most powerful tool for regulating land use (Manitoba Intergovernmental Affairs, 2001). Today, reflecting in large part the imperatives of ILO expansion, over 80% of municipalities are involved in some form of development planning, while 122 now report zoning by-laws (Manitoba Intergovernmental Affairs, 2001). Not only were Manitoba’s rural communities lacking the legal authority to control the hog industry, they also lacked the cultural authority. There is virtually no history of local regulation of agricultural land use in Manitoba. Producers were expected to engage in good stewardship. The Manitoba Clean Environment Commission (1979: 3) commented, “In the past the intensity of livestock production operations was usually limited by the ability of the land to produce feed and forage.” Few normative mechanisms existed to control the behaviour of factory farms,
which not only produced huge concentrations of manure but which also reaped an economic benefit from spreading it as close as possible to its point of origin (Innis, 1999). In the absence of strong legal and cultural mechanisms to control producer behaviour, the logic of local treadmills (Gould, Schnaiberg and Weinberg, 1996) took over in many rural communities. With the decline of traditional mixed farming, ILOs became the major investment opportunity in the local economy. Allied industries such as feed mills, construction and trucking all hoped to benefit. Local governments saw a means of reversing declines in population, employment and tax revenues.

The logic of treadmills and the limitations of community regulation of hog barns converged in a section of Manitoba known as the Interlake. Located north of Winnipeg between two huge bodies of freshwater, Lake Winnipeg and Lake Manitoba, the region was smoothed out by glaciers and is low-lying, flat and flood-prone. Water tables are high and the land surface is varied, ranging from hard clay to sand to marshland. The population is largely rural and fishing, mixed farming and tourism remain important pillars of the regional economy. The wetlands are of prime ecological significance. Although hogs and cattle have long been raised in the Interlake, intensive factory farming played little role in the region’s economy until the early 1990s. The bulk of Manitoba’s hog industry was (and largely remains) concentrated in the southeast and southcentral sections of the province (Statistics Canada, 1997). Intensive livestock operations require extensive amounts of land that can adequately absorb the nutrients from manure. Residential developments, restrictive municipal by-laws and environmental opposition eventually led to a scarcity of land available for manure spreading in the ILO-saturated areas (Sanders, 2001) and hog barn promoters looked elsewhere. The Interlake beckoned with its supply of relatively inexpensive land and fresh water.

In 1993, Puratone, one of Manitoba’s largest corporate hog producers, proposed a 2000-sow barn expandable to a 4000-sow, three-site operation in the Interlake municipality of Armstrong. The site was adjacent to two other municipalities, Bifrost and Gimli. Furthermore, the site was beside a creek that flowed through Bifrost and Gimli to drain into Lake Winnipeg, six miles away. Interviews with provincial government officials and community activists involved in assessing the proposal revealed significant concerns. Since the storage system would have the capacity to hold 4 million gallons of untreated hog waste, water quality was the primary issue. Although three jurisdictions were affected, only one, Armstrong, had the authority to decide, thus effectively splitting the opposition. Armstrong had (and still has) no by-laws to control land use and treadmill politics were paramount. No by-laws mean no requirement for a public meeting for a conditional land-use application. Instead, “informational” meetings were conducted by representatives of the company and
provincial government officials to convince local people that they would benefit. Higher prices for feed grain, loads of “organic” fertilizer and higher municipal revenues were promised as rewards. Local influentials such as the reeve (mayor), members of town council and the Chamber of Commerce threw their support behind hog barn development. Rumours circulated (and were denied) that town notables had become investors.

Town council approved the proposal. However, grass-roots opposition quickly mobilized. Opposition groups, such as the Bifrost Ratepayers Association and Interlake Citizens for a Clean Environment, were formed and picketing got underway outside the municipal office. The media started to cover the protests. Tempers flared during one protest and the RCMP was called in to restore calm. Under public pressure, the council reversed itself and rejected the hog barn’s application. The company wrote to the municipality and threatened to sue, arguing that without by-laws they had no legal basis to deny the permit. Construction commenced but the controversy was not ended. The partially completed structure mysteriously burned to the ground. Another time the barn sight was shot up and a security guard beaten. It was eventually completed, but problems continued. The irrigation gun equipment, touted as state of the art, jammed and flooded fields with manure. One local resident commented that “the sewage looked like lakes from the air.” Gimli, which has a large lakefront and recreational industry, imposed restrictions on livestock operations and manure spreading, but Bifrost and Armstrong continued to encourage hog barns.

Controversy spread to other regions of the province as the industry grew. In 2000, a record 52 proposals for new or expanded ILOs totalling 35,642 AU and worth over $200 million were put forward (Manitoba Agriculture and Food, 2000). The previous record was 40 proposals of 21,596 AU in 1998. Since most hogs are produced in southeastern and southcentral Manitoba, where land-use and water-quality concerns are slowing further growth, much of the expansion has now shifted to southwestern Manitoba, a heavily agricultural area (Statistics Canada, 1996) where grain and cattle, rather than hog farming, are dominant. In 2000, for example, the southwest region received 20 of the 52 proposals totalling 8692 AU. In 1995, it received only one proposal for 112 AU. Many of these proposals, especially those by corporate operators, are being vigorously contested. Plans by Premium Pork, an Ontario-based corporate producer and one of Canada’s largest, to build up to 10 big farrowing and feeder barns in the southwestern communities of Hamiota, Shoal Lake and

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4. Certain communities in southeastern Manitoba that are among the largest hog producers, such as Sainte-Anne and La Broquerie, have seen significant declines in their farm population and increases in their non-farm population (Statistics Canada, 1996). This may be a factor in growing resistance to further hog barn expansion. However, the concentration of big ILOs in these communities, in dairy cattle and poultry as well as hogs, could be a factor causing the farm population to decline.
Strathclair have aroused strong opposition from local cattle and grain farmers. Perhaps the bitterest divisions have occurred over the company's proposal for two 2500-sow barns in the municipality of Rossburn. The approval was granted, and then rescinded, in a series of raucous meetings in which the RCMP and, later, private security guards provided public safety. Afterwards, local clergy appealed for calm.

Canmark Family Farms, controlled by Danish investors, received a provincial waiver from foreign-ownership restrictions on farmland and has been trying to construct hog factories in communities without land use by-laws. In Shell River, along Manitoba's border with Saskatchewan, their plan to construct a 3000-sow farrowing barn, plus feeder barns and feed mills, has been resisted by a group called Citizens Against Factory Farming, which succeeded in getting the town to approve a temporary moratorium on ILOs, pending the approval of by-laws. One town has introduced restrictions on liquid-manure storage facilities that go far beyond provincial regulations, while another town approved a plebiscite limiting confined livestock operations to 400 head. Although more proposals are accepted than rejected, opposition is growing. In 2000, about a third of the 23 hog barn proposals in southeastern Manitoba were rejected, withdrawn or tabled. In the southwestern region, nine of 20 proposals were approved, while the rest were either rejected, tabled or pending (Manitoba Agriculture and Food, 2000).

The delegation of responsibility for decisions on siting hog barns to the rural municipalities has polarized the local decision-making process. Not only was there a treadmill logic in favour of development but, equally important, grass-roots opposition quickly mobilized. Grass-roots activism has grown rapidly in the regulatory vacuum in which ILOs have multiplied, seemingly unconstrained by existing legal and political institutions. The intensity of hog barn disputes is indicative of the uncertain and often contradictory outcomes of a major environmental issue, which is fought out community by community. The salience (Cable and Cable, 1995) of such disputes is augmented by the interaction of socio-economic factors—notably the introduction of corporate operations into rural communities—along with fears of significant environmental damage. These conflicts are often constructed as zero sum, directly pitting economic beneficiaries against environmental victims and polarizing rural communities into "environmental classes" (Murphy, 1994: 188). According to interviews conducted for this project, many producers believe that hog barns offer the only reasonable chance of surviving economically under highly competitive conditions. Opponents, on the other hand, believe that they will suffer the environmental impact of other people's success. Salience is further intensified by the new focus on water quality—and, by implication, human health—rather than odour, as the greatest perceived environmental impact of ILOs. This is confirmed in a recent Enviromics
national poll (Miller, 1998) in which hog barns are viewed as the most environmentally damaging form of agriculture and water quality as the greatest public concern.5

A woman from southeastern Manitoba where hog barns are numerous stated, "I have nothing against pig farms in general but remember—our children have to drink the water." An activist from Western Manitoba reflected the view common among hog barn opponents that provincial environmental standards are weak, "Who cares if a hog factory meets so-called provincial standards—I still don’t want them in our community." Hogwatch Manitoba, the umbrella organization for a loose coalition of sixteen environmental, community, family farm and animal welfare groups fighting hog industry expansion, has grown in membership and in tactical sophistication. It now routinely dispatches activists to rural land-use hearings across the province to counter hog barn proposals and to organize local opponents. Despite some successes, the Hogwatch leadership has grown frustrated with a municipal approval process it perceives as dominated by local politicians lacking the expertise to evaluate technically complex proposals and open to industry pressures (Hogwatch Manitoba, 2001). A leading Hogwatch organizer has urged the provincial government to take more responsibility to set environmental standards, "Rural municipalities shouldn’t be left on their own to okay hog operations as they often don’t have the resources to analyse complicated environmental and technical data."

Ironically, the hog industry has also grown disillusioned with a process that it views as uncertain, conflict-ridden and subject to the vagaries of municipal politics. Conditional land use hearings require public meetings where industry representatives are often subject to criticism, sometimes strident and angry, when environmental or public health issues are in dispute. Many proposals have been defeated or delayed. A representative from Elite Swine, a dominant player in the supply chain, asserted that municipal land use hearings should "stick to facts... and guarantee that if proponents meet all guidelines then their permit should be issued." The chairman of the Manitoba Pork Council, the leading industry lobby group, has complained, "Local politics sometimes ignores the merits of an application and pays more attention to public pressure." The industry also wants the province to impose uniform standards, just not as high as those advocated by their environmental opponents.6 The desire for greater

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5. In this poll, 36% of Canadians view hog farms as the most environmentally damaging form of agriculture, well ahead of cattle and dairy farming, in second place at 20%. The figures rise to 41% in Manitoba and 59% in Quebec, the provinces with the most concentrated hog production. Water pollution due to livestock waste is identified as the most serious environmental concern by 19% of the national sample, in second place after chemical/pesticide contamination but well ahead of livestock odours at only 4% (Miller, 1998).

6. A long-standing point of contention between environmentalists and the hog industry is the demand by environmentalists to lower the threshold level under which farms would come under provincial inspection and regulation from the current 400 AU to 300 AU. This would bring more farms under regulatory control and has been opposed by hog producers.
provincial involvement is echoed by many municipal councillors them-
selves. "It's just too complex, we need more help," stated the mayor of one
rural municipality that has experienced significant controversy over hog
barn proposals. New concerns about water quality have increased the com-
plexity, as well as the intensity, of many of the discussions further straining
the effectiveness of the municipal approval process.

Discussion

The expansion of the hog industry in Manitoba presents a useful case
study of the global treadmill of production in agriculture. It has been
characterized by the ascendency of large-scale, specialized producers allied
with meat processors, suppliers and other corporate interests. Smaller hog
producers and more traditional mixed farmers have found themselves at a
disadvantage compared to factory farms. Investment has flowed in from
Europe and the U.S., as well as central Canada, and export markets have
been targeted in the U.S., Europe and Asia. Manitoba has promoted this
development as a positive response to the crisis in prairie agriculture. Pork
is a value-added answer to low grain prices and profits, as well as competi-
tive global markets. The provincial government has supported acceler-
tion of the treadmill and allied itself with corporate interests seeking to
grow the hog industry. Economic deregulation and neo-liberal policies
have accompanied these developments. The hog industry has become
disembodied from the key components of the Canadian system of agri-
cultural regulation developed in the last century—notably marketing
boards, co-operatives and orderly marketing arrangements. The policy
of deregulation represents an important disjunction with the past agri-
cultural policy that much more reflected the political power of the
smaller producers.

Treadmill expansion of ILOs soon produced negative environmental
externalities (Bell, 1998). The earliest concerns were about the strong
odours associated with large pig farms. The initial response of the
Manitoba government, similar to other North American jurisdictions, was
to support treadmill acceleration by protecting the industry from the poli-
tical consequences of its environmental impact. "Right to farm" legislation
served as the environmental equivalent of economic deregulation, permit-
ting factory farming to proceed while regulatory and judicial intervention
was substantially held in abeyance. "Right to farm" was an example of the
"economic synthesis" (Schnaiberg, 1980) of the conflict between economic
expansion and environmental protection in which expansion is strongly
privileged. The Manitoba government threw its weight behind the growth
of the hog industry, while marginalizing environmental considerations.
The contradiction between the state’s role as development promoter and
environmental regulator could be masked behind a legitimation dis-
course—"right to farm"—constructed to reflect widely held values in
favour of agriculture, economic growth and private property rights. Two
other factors strengthened the Manitoba government’s neo-liberal approach to environmental regulation of ILOs. One was the social construction of the problem as largely a subjective one of odour, rather than a more serious threat to environmental sustainability or human health. The second was the delegating of the primary responsibility for vetting ILO proposals to the rural municipalities, through their land-use authority. This protected the provincial government from the most contentious and politicized aspects of the decision-making process.

The neo-liberal approach has proven unworkable. Treadmills may operate on a global scale but environmental externalities are likely to be differentially distributed (Gould, Schnaiberg and Weinberg, 1996; Yearley, 1996) and local in their impact. This has been the case in Manitoba, where certain communities, notably in the southeastern part of the province where the industry is concentrated, have become sewers for livestock wastes. The rural municipalities have also borne the brunt of polarized debates about hog barn sitings. Municipal governments often lack the expertise to evaluate complex environmental issues, while local economic forces make hog barn projects difficult to resist. In recent years, the explosive issue of water contamination and the threat to public health have changed the terms of the debate. Environmental concerns about ILOs have become more visible and more politically potent. Pressure has grown on the Manitoba government to take a much more prominent role in ILO regulation.

This pressure has been exerted from both sides of the debate. Environmentalists have demanded that the province impose higher minimum standards for hog barns and greatly step up the policing of manure management practices. The hog industry, too, has demanded uniform—though lower—provincial standards to replace the current patchwork of municipal by-laws and variances and, presumably, to facilitate the hog barn approval process. The provincial government has set standards for manure management through the Manure and Mortalities Regulation and plans to step up monitoring by increasing the number of inspectors to 16 by 2002. This is a move away from an “economic synthesis” and towards a “managed scarcity synthesis” (Schnaiberg, 1980) in which treadmill forces of economic growth are balanced against new and more powerful demands for environmental protection. Environmental management (Torgerson, 1999; Dryzek, 1997), in the form of regulations and monitoring, has become the new weapon in the government’s arsenal to adjudicate between competing claims to the agricultural resource base.

Adoption of a “managed scarcity synthesis” has rendered “right to farm” obsolete as a legitimation discourse to underpin hog industry expansion. The Manitoba government has been forced to confront at least some of the more serious environmental concerns about ILOs. This has led to a search for a new legitimation discourse, one that could better balance the interests of the various stakeholders (Hall, 1998) in the hog industry debate, including corporate producers, small farmers, environmentalists.

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and rural municipalities. The province has begun promoting “sustainable development” to legitimize the industry’s continued growth (Livestock Stewardship Panel, 2000). However, this has proven problematic. Concepts such as “sustainability” and “sustainable development” have provoked widespread debate over their ambiguities, complexities and contradictions (Torgerson, 1999; Redclift and Woodgate, 1997; Dryzek, 1997). The concept of sustainable development, however, retains considerable potency within a policy context as an effective tool for legitimation. It is a “scene-stealing argument” (Myerson and Rydin, 1996: 194) that can overcome the polarity between economic growth and environmental impact. Under the label of sustainability, much can be made possible.

The sustainability thesis was advanced by the most recent panel commissioned by the Manitoba Government to study the hog industry (Livestock Stewardship Panel, 2000). The panel’s recommendations call for a revision of the provincial regulatory regime along lines of sustainable development, defined in terms of three interrelated key components: “economic viability, environmental stewardship and social and equity issues” (13). These components must be “integrated in public and private decision making.” ILOs would be encouraged to develop improved environmental management techniques to reduce the amount of waste displaced into air, water and soil. Regulatory standards would be raised and more farms would come under the regulations. Most significantly, the panel proposed that the province undertake the primary responsibility to assess ILO proposals for environmental impact, in place of the current reliance on municipal land-use authority (55).

The panel’s recommendations conceptualize “sustainable development” as a form of corporate environmentalism (Adkin, 1992) that supports hog industry expansion in a context of eco-efficiency and more rigorous environmental management. The industry would continue to grow, but the decision-making process would be ratcheted up from the local to the provincial political level. The assumption is that economic goals and environmental goals can be made to converge. This assumption has been difficult to implement in practice. Consensus between the Manitoba Pork Council, representing producers, and environmental and community activists remains elusive. For example, the panel’s proposal to expand the manure management regulations to control phosphorous, a water pollutant, as well as nitrogen, has been welcomed by environmentalists but not by the hog industry. Furthermore, the prospect of greater provincial involvement in the hog barn siting process does raise questions about local autonomy. Some municipalities have expressed concern that they would lose the right to pass by-laws setting higher environmental standards than the provincial regulations. So far, the Manitoba government has appeared more

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7. For example, the town of Piney, in Manitoba’s southeast corner, is examining proposed by-laws that would force producers to have a minimum of two acres of land per head of hogs or cattle. If approved, it would effectively ensure that large-scale ILOs could not be established in that rural municipality.
eager to accept "sustainable development" as a legitimation discourse than to adopt the panel’s substantive recommendations. Proclaiming that developments in the hog industry must be sustainable seems a less forbidding task than actually drafting regulations that could bridge the gap among hog industry stakeholders and between the competing imperatives of economic growth and environmental protection.

Conclusions

The hog industry has played a leading role in the transition to a more intense and specialized form of industrialized agriculture in Manitoba, as well as other parts of North America. It has become disembedded from the major regulatory institutions established to organize the marketing of agricultural products in Western Canada during the past century. Agriculture maintains its position on the transnational treadmill of production, but at increased risk to the resources that sustain its life-support base. The Canadian prairies are a major recipient of investment in the international livestock industry, but also a sewer for its animal wastes. The negative externalities from this industry’s expansion have now become politically visible and a powerful issue in many rural communities. The state has been challenged to manage this contentious problem while preserving its basic commitment to treadmill expansion.

Initially, a deregulation strategy legitimized through a "right to farm" discourse was implemented. This neo-liberal approach is no longer viable. Environmental opposition to the unregulated expansion of livestock production through factory farms has grown too strong to ignore, especially, post-Walkerton, as the threat to water quality becomes the focal point of public concern. Conflicts in the rural municipalities that were given the primary responsibility for approving hog barn proposals have been intense and highly polarizing. The level of conflict, plus the inadequacy of local environmental expertise, suggest the limitations of local government in coping with the negative externalities of transnational treadmills. The hog industry itself has begun to demand at least a limited form of re-regulation. This may seem counter-intuitive, but it is not uncommon for industry lobby groups to support state environmental standards under certain circumstances (Yearley, 1996). To the proponents of the Manitoba hog industry, expanded provincial regulation may be preferable to the conflict situation in many rural municipalities, where it is far from certain that all hog barn proposals will be approved. Equally important, regulation is a form of legitimation; it is harder to argue against a proposal that is compliant with legally established standards.

The new approach preserves treadmill expansion of ILOs, but adds stepped-up provincial environmental management combined with a legitimation discourse derived from the rhetoric of sustainable development. The environmental regulation of ILOs implies a recognition that a
landscape of factory farms will require a level of state control similar to that established to control pollution in the manufacturing sector decades ago. This raises some questions that cannot be answered in this paper, but that might be instructive for further research. These questions revolve around the use of environmental regulations as perhaps the dominant societal tool to assert some collective control over ILOs, especially since neo-liberal agricultural policies have largely freed ILOs from the vestiges of economic regulation. What would be the distributional consequences? Would higher environmental standards privilege the bigger, richer and more industrialized operations and establish barriers to entry against smaller producers? Or, would smaller producers, mixed farmers and "organic" operations find an opening to improve their market share? Furthermore, would state environmental management combined with the rhetoric of sustainable development succeed as a legitimation discourse supporting ILO expansion? It remains to be seen whether this approach will prove successful in managing the contradictions among the various actors and interests that were unleashed by the acceleration of this powerful treadmill.

References


