

Intensive Livestock Operations, Disembedding, and Community Polarization in Manitoba

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Disembedding mechanisms separate activities from their local contexts and reorganize them in the global economy. Manitoba's rapidly growing intensive hog industry has become disembedded socioeconomically, environmentally, and politically. Socioeconomically, intensive livestock operations (ILOs) have come under corporate control and are no longer bound by collective agricultural supply management policies. Environmentally, odor and water quality concerns have increased at the local level and have not been easily amenable to legal and regulatory redress. Politically, disputes over hog barns have disrupted the decision-making process in many rural communities. This has forced a reluctant provincial government to become more involved in the problem.

Keywords disembedding, hogs, intensive, Manitoba

In the spring of 2000, the municipal water supply in Walkerton, Ontario, became contaminated with deadly *Escherichia coli* from cattle manure and 2300 people were stricken, 7 fatally. This tragedy has added urgency to the debate about the social and environmental impact of intensive livestock operations (ILOs) designed for the large-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). Critics of industrialized agribusiness (Berry 1991; Kenney et al. 1991) have raised concerns about the environmental sustainability of this food regime, including air, water, and soil quality, and 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). ILO expansion poses the question of which governance strategies may best be employed to ensure that these operations are managed in the public interest. Canadian provinces and rural municipalities, similar to other local places faced with homogenizing market pressures (Sachs 1999), find themselves in a political quandary—internally divided on the

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issue of ILOs and lacking sufficient information or jurisdictional authority to practise effective environmental democracy.

The concept of “disembedding” (Polanyi 1957; Granovetter 1985), under which economic activities become separated from the social bonds of local communities, might usefully be applied to the problem of ILOs in rural Canada. Giddens (1990; 1994) has reformulated this concept, in the light of globalization, as a process in which activities are “lifted out” from local social control and then recombined across larger units of time and space. He states, “Disembedding mechanisms depend on two conditions: the evacuation of the traditional or customary content of local contexts of action, and the reorganizing of social relations across broad time-space bands” (Giddens 1994, 85). 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 re-embed them back into our communities and social structures? The article examines this dilemma through a case study of the Province of Manitoba, site of Canada’s fastest growing intensive hog industry over the past decade.

The Problem of Disembedding/Re-embedding in this article is organized around three interrelated points of contention:

1. A socioeconomic focus dealing with concerns about the growing economic dominance of large scale ILOs, especially hog operations, within the agricultural sector. The tendency toward economic concentration, vertical integration, and corporate ownership has been seen as a threat to smaller scale, less specialized forms of agriculture (Edwards and Ladd 2000; Thu 1996) and to established structures of agricultural regulation (Friedman 1998).
2. An environmental focus dealing with concerns about water, soil, and air quality resulting from the assimilation of large quantities of livestock waste as well as the controversy over offensive odors (Thu 1995). Factory farming challenges the ecological balance associated with more traditional forms of livestock agriculture (Mussel and Martin 2000). This problem is related to the environment’s role as a sewer (Redclift 1996) for the waste products of industrialized food production and the distributional consequences of this role.
3. A political focus on the fracturing of social solidarity in many rural communities resulting from conflicts over the siting and implementation of large-scale ILOs (Thu 1995; De Lind 1995). Polarization between potential beneficiaries and victims of these contested developments has often pitted neighbor against neighbor and overwhelmed local channels of political communication. The result has been a highly contentious process to establish governance mechanisms capable of resolving these disputes and re-embedding ILOs back into agreed-on normative structures.

Methodology

Information for this article has been collected from heterogeneous sources, which is necessary because there is no central source of information on the hog industry in Manitoba. Government documentation on agricultural regulation has been obtained through 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 have been accessed online.

Interviews were conducted with 30 persons connected with the pork industry, roughly balanced among developers, environmental opponents, and regulators. This includes officials from the provincial departments of Agriculture, Conservation, and Intergovernmental Affairs. These interviews were conducted in person, on the telephone, or through e-mail. The interviews contained standard questions directed to all respondents; in addition, each respondent was given an open-ended opportunity to state his or her opinions on the future direction of the pork industry. Detailed notes taken from the interviews were placed on file and form the basis for statements attributed to respondents quoted in this article. Finally, I have attended hearings on the Province of Manitoba's Livestock 2000 Initiative, municipal council meetings, and environmental discussions of hog industry issues in various parts of the province.

Socioeconomic Perspectives

Manitoba occupies the eastern end of Canada's western prairie region and 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 20th century, western Canada's grain economy has undergone a decline from which there is little prospect of recovery (Qualman 2000). Between 1971 and 1996, the number of Manitobans who live on farms declined from over 131,000 to less than 80,000, while the proportion employed on farms dropped from 13% to 7% (Livestock Stewardship Panel 2000). A key factor behind this decline has been the prevalence of depressed prices in highly competitive global 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 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—mainly feed barley—a vast acreage (13.3 million acres in Manitoba) under cultivation and available for waste assimilation, and probusiness attitudes (Manitoba Agriculture and Food n.d.). Pork producers from Northern Europe to North Carolina facing environmental and regulatory restraints were welcomed to Manitoba's greener pastures. Pork industry advocates claimed that Manitoba would benefit from value-added production, globalized export markets, and even environmental sustainability (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. 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 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 et al. 1996) in which nations and regions compete for jobs and investment in the context of global capital mobility. This provides 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. 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 the western Manitoba city of Brandon with the capacity to slaughter 90,000 hogs per week. Maple Leaf also took a giant step toward 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. United States-based Smithfield, the world’s largest pork producer, bought Schneiders, a Canadian meat packer with substantial slaughter capacity in Manitoba. Hog industry enthusiasts predicted a further doubling of production to 10 million hogs (Fallding 2000). Alarmed, hog industry opponents, grouped in a coalition called Hogwatch Manitoba, invoked fears of a flood-prone province awash in a sea of manure¹ and called for a moratorium on new barns.²

Behind the growth of Manitoba’s hog production is a change in industrial composition. Following trends in Europe and the United States, 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 now account for over 50% of Manitoba’s herd. Farms of that size accounted for only 15% of Manitoba’s herd in 1986 (Table 2). Corporate operations

TABLE 1 Number of Pig Farms and Average Number of Pigs per Farm, Manitoba and Canada, 1981–2000

Year	Number of pig farms, Manitoba	Average number of pigs per farm, Manitoba	Average number of pigs per farm, Canada
1981	5098	172	177
1986	3563	301	268
1991	2969	434	345
1996	2064	861	523
2000	1430	1354	884

Note. From Statistics Canada (2001).

TABLE 2 Number of Pigs on Farms by Herd Size, Manitoba 1981–2000

Herd size	Thousands of pigs in given year				
	1981	1986	1991	1996	2000
1–77 Head	56	34	25	19	7
78–272 Head	151	129	104	58	49
273–527 Head	166	184	168	131	76
528–1127 Head	164	226	252	266	212
1128–2652 Head	115	122	161	288	332
2653–4684 Head	158	209	192	308	278
4685 Head and over	60	163	383	818	979
Total	874	1071	1287	1809	1935
Percent of pigs on largest farms, Manitoba	6.9	15.2	29.7	43.2	50.6
Percent of pigs on largest farms, Canada	5.9	7.5	10.9	26.1	34.3

Note. From Statistics Canada (2001).

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 coordination” 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 labor and, most important, the land on which the liquid waste must be spread. Three of the 10 largest hog production companies in Canada are now based in Manitoba (Freese 2000), while a fourth has major operations there.³

The hog industry has become disembedded from normative structures that 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), as part of the transition from Fordist to post-Fordist food regimes (Kenny 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 cooperatives 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.

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 represented the largest producers and that 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, integrators, and corporate investors who were now free to carry out their business unrestrained by any need to "cooperate" with their smaller counterparts. 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 victory of the larger producers clearly signaled the disembedding of the hog industry from collective supply management structures established in the last century.

Environmental Regulation

The disembedding process was also underway in the field of environmental regulation as governments moved to exempt pig farms from local objections to offensive odors. 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 3 million gallons of liquified waste annually (Tessier n.d.). The manure contains large quantities of nitrogen, ammonia, and phosphorous. Conventional means of flushing it with water, storing it in lagoons, or spreading it with 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 odor problem. It represents the "unpaid waste cost" (Murphy 1994, 111), which becomes a point of contestation. Who is responsible for it and who pays for it? What mechanisms will be relied on to decide these questions? Scientific validation of an environmental claim is usually crucial if that claim is to be taken seriously in the public arena (Hannigan 1995; Yearly 1991). Concerns about odor, 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 (Schiffman 1998; Thu 1995). Partly as a result, political authorities in Manitoba and elsewhere in Canada have been slow to take seriously claims of significant environmental damage resulting from large-scale swine production.

The Manitoba government very early established itself as a leader among Canadian provinces in protecting the nascent hog industry from regulatory and judicial intervention. In 1973, when Manitoba's hog industry was less than a quarter its current size, it exempted livestock operations from environmental legislation,

citing the lack of “scientific knowledge concerning the control of odours” (Wilson 1975, 21). When, in 1975, neighbors won damages in a civil suit against a hog barn for “nuisance to the plaintiffs by reason of offensive odours” (Wilson 1975, 23), the Manitoba government responded the following year with the Nuisance Act, which limited the right of citizens to sue for nuisance. The restriction on nuisance claims was much sought after by the hog industry. Agriculture interests strongly lobbied government that they should not be subject to nuisance lawsuits merely for carrying on what they defined as “normal” pursuits. By the 1990s, most Canadian provinces had passed legislation, following the lead of Manitoba and Quebec, that 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 odors. 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 (Webster 1987). Environmental critics were portrayed as antiagricultural zealots who would deprive legitimate farmers of their right to earn a living. 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 (1995) 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). By embracing the “right to farm,” the provincial government could disarm environmental critics by portraying itself as a defender of agriculture while restricting the right of citizens to seek redress for the loss of nature’s amenities.

“Right-to-farm” legislation furthered the disembedding of ILOs from local social control and served as the environmental equivalent of economic deregulation. Cutting off the right to sue, however, did not end the controversy over nuisance but only transferred it to the political arena. In 1978 a new provincial government authorized an investigation of ILOs with a view to developing regulations to address public concerns. The subsequent report (Manitoba Clean Environment Commission 1979) focused on “large confinement ILOs,” which 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 report recommended 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 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 cover the means of storing and spreading manure (Manitoba Clean Environment Commission 1979). This was a tentative step toward shifting more of the waste cost equation to the producer. The question of whether odors constitute an environmental contaminant proved much more difficult to resolve. The report concluded that odors could not be scientifically measured and did not represent a threat to the environment and public health. However, the report did agree that they were a nuisance and that odor control could best be achieved by land use planning to maintain minimum separation distances between ILOs and nearby residences. Accordingly, it 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, which is now enshrined as policy in most Canadian provinces. The first track of the system are 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 from controls, 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 centralized environmental regulation (Torgerson 1999; Dryzek 1997; Weale 1992). Governments are usually reluctant to impose restrictions on profitable and job generating forms of economic activity. Even when regulations are enacted, monitoring and enforcement tend to lag behind the intent of regulatory policy contributing to an “implementation deficit” (Weale 1992). A recent provincial inquiry (Livestock Stewardship Panel 2000) found serious deficiencies with Manitoba’s regulatory regime for ILOs. Knowledge of manure management by hog barn operators and compliance with guidelines were seen as inadequate. Inspection and soil testing of fields was viewed as problematic, with only about 10% of the land tested regularly. 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 11 inspectors to carry out enforcement of the Manure and Mortalities Regulation. They are responsible for regulating not only hog barns but also all other livestock producers. Interviews with the regional 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 Manitoba livestock regulations largely sidestepped the odor issue. 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. The provincial government accepted the recommendations of the 1979 report 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 conditions. Odor concerns would thus be dealt with locally. This decision can be linked to the growing dependence on “communities” (Etzioni 1996; Rose 1996) to address 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. This meant that the primary responsibility for re-embedding ILOs into acceptable normative structures rested with the rural municipalities. While an argument can be made that municipal vetting of ILOs can be a means of establishing some measure of local control over this burgeoning industry, the experience in Manitoba has been much more complicated and pessimistic in this regard.

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 8 reported

zoning bylaws, 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 bylaws (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 the past the intensity of livestock operations was usually limited by the capacity of the land to produce feed and forage" (Manitoba Clean Environment Commission 1979, 3). Few normative mechanisms existed to control 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 behavior, the logic of local treadmills (Gould et al. 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 became evident as the hog industry began to expand from its base in southeastern and south-central Manitoba, where most Manitoba hogs are produced (Statistics Canada 1997), to other parts of the province. Intensive livestock operations require a sufficient land base to absorb the nitrogen nutrients in the manure they accumulate. Residential developments, restrictive municipal bylaws, and water quality concerns eventually led to scarcity of available land in the ILO-saturated areas (Sanders 2001) and hog barn promoters looked elsewhere. One such area is the Interlake, which is located north of Winnipeg between two huge bodies of freshwater, Lake Winnipeg and Lake Manitoba, 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. Fishing, mixed farming, and tourism remain important pillars of the regional economy, while its wetlands are of prime ecological significance. Although hogs and cattle have long been raised in the Interlake, factory farming played little role in the region's economy until the early 1990s.

According to interviews with a half dozen provincial government officials and community activists familiar with the local situation, the circumstances changed in 1993 when Puratone, one of Manitoba's largest corporate hog producers, proposed a 4000-sow, 3-site operation in the Interlake municipality of Armstrong. Since the storage system would have the capacity to hold 4 million gallons of untreated hog waste, and since it was located adjacent to a creek that drained into Lake Winnipeg 6 miles away, water concerns were high. 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 mayor, members of town council, and the Chamber of Commerce threw their support behind hog barn development. Rumors 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 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 (Royal Canadian Mounted Police) was called in to restore order. 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 the council 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 activist commented in an e-mail that "the sewage looked like lakes from the air." The hog industry has expanded in the Interlake but has left behind a legacy of bitterness and accusations of contamination of groundwater and pollution of forage and wetlands.

Controversy spread to other regions of the province as the industry continued to grow. In 2000, a record 52 proposals for new or expanded ILOs totaling 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. 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 1 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 several southwestern communities have aroused strong opposition from local cattle and grain farmers. Perhaps the most bitter divisions have occurred over the company's proposal for two 2500-sow barns in the municipality of Rosssburn. The approval was granted, then rescinded, in a series of raucous meetings in which the RCMP and later private security guards provided public safety. Afterward, 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 nurseries, 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 bylaws. Although more proposals are accepted than rejected, opposition is growing. In southeastern Manitoba in 2000, about a third of the 23 hog barn proposals were rejected, withdrawn, or tabled. In the southwestern region, 9 of 20 proposals were approved while the rest were either rejected, tabled, or still pending (Manitoba Agriculture and Food 2000).

Hog barn disputes have ignited the polarized local politics of "space, place, environment" (Harvey 1996, 43) in many Manitoba communities. Not only was there a treadmill logic in favor of development but, equally important, grass-roots opposition quickly mobilized. Municipal land use hearings became arenas of contestation and community divisiveness. Grass-roots activism has grown rapidly in the regulatory vacuum that is part of the disembedding process in which ILOs have multiplied, 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 conflict which is fought out community by community. The salience (Cable and Cable 1995) of such disputes is augmented by the interaction of socioeconomic factors—notably the introduction of corporate operations into rural communities—along with fears of significant environmental damage. According to interviews carried out for this project, hog barn proponents and opponents agree that water quality concerns have replaced odor as the most potent source of opposition to new hog barns.⁴

In this context, local environmental mobilization offers citizens a means of informal social control (Cable and Cable 1995) over developments when they fear negative consequences for their health or quality of life. One Interlake farmer, a veteran of several battles against ILOs, stated, “We should be able to make decisions based on local environmental conditions. Who else knows that better than us?” Hogwatch Manitoba, the umbrella organization for a loose coalition of 16 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 organize local hog barn 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. 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 not standard, 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 angry and strident, when environmental or public health issues are in dispute. 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.” This point of view is echoed by many municipal councillors themselves. “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. Concerns about water quality have increased the complexity as well as the visibility of many of the discussions. Clearly the high degree of polarization and lack of environmental expertise at the municipal level limit the effectiveness of the municipal approval process as a means of re-embedding ILOs back into accepted normative standards.

Conclusions

Disembedding mechanisms separate activities from their local contexts and reconstitute them in a wider social universe. Manitoba’s hog industry has become disembedded from established regulatory and normative structures. The Canadian prairies are now a major source of pork exports and a magnet for investment in the international livestock industry but also a sewer for its animal wastes. Economic deregulation and “right-to-farm” policies, in tandem, support the ongoing “treadmill of production” in prairie agriculture. The same treadmill pressures and the

global organization of the hog industry make it difficult to institute re-embedding mechanisms capable of overcoming the regulatory vacuum. Socioeconomic instruments developed in the previous century to regulate agriculture, notably cooperatives and supply management, have been overwhelmed by market forces. The hog industry and its corporate structure have become the dominant force in Manitoba's farm economy. Alternative forms of agricultural production and land use cannot compete with it. Environmental regulation, on the other hand, has been instituted to implement some minimum standards in the storage, handling, and spreading of livestock wastes. This established a foundation for a more environmentally responsible livestock industry, but one that has suffered from a number of drawbacks. First, the Manitoba government has been reluctant to impose restrictions that might hinder the rapid growth of the industry. Second, the "implementation deficit" has meant inadequate resources devoted to the monitoring of manure management practices. Finally and more generally, "right-to-farm" policies and the belief that odor problems do not merit regulation have limited the effectiveness of environmental policymaking in the field of agriculture. Public policies do not yet recognize that factory farming will require the same level of environmental regulation that has long been applied to the manufacturing sector.

As a result, the front-line responsibility for re-embedding—for establishing local governance of ILOs—remains with the rural municipalities. This has proven less than satisfactory in terms of effective decision making. Market forces and treadmill pressures ensure that many municipalities cannot resist hog barn proposals that offer a portal into the most dynamic segment of the farm economy. Lack of environmental expertise at the municipal level is another problem. Few municipal councils have the kind of expertise necessary to evaluate technically complex proposals. Finally, fierce conflicts and polarized politics have fractured social solidarity in many municipalities with deleterious consequences for the local decision-making process. Despite the fact that these problems have been generally acknowledged by all sides in the hog industry debate—industry proponents, environmental opponents and government regulators—so far there has been little political will to change the situation.

Notes

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 3 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 United States (Fallding 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 odor and water quality problems.

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 Federe; other Manitoba companies on the top 10 list are Puratone of Niverville with 23,000 sows and Hytek of LaBroquerie with 20,000 sows. Premium Pork with 20,000 sows is based in Lucan, Ontario, but has substantial operations in Manitoba (Freese 2000).

4. 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 odors at only 4% (Miller 1998).

References

- Agriculture and Agrifood Canada. 1997. *Investing in Canada's hog and pork industry*. www.aeis.agr.ca/misb/aisd/redmeat
- Bell, I. 1999. Manitoba hog producer exits with chagrin. *Western Producer* March 11.
- Berry, W. 1991. Living with the land. *J. Soil Water Conserv.* 46(4):390–393.
- Cable, S., and C. Cable. 1995. *Environmental problems, grassroots solutions*. New York: St. Martin's Press.
- De Lind, L. 1995. The state, hog hotels and the right to farm: A curious relationship. *Agric. Hum. Values* 12(3):34–44.
- Dryzek, J. 1997. *The politics of the earth: Environmental discourses*. Oxford: Oxford University Press.
- Durning, A., and H. Brough. 1991. *Taking stock: Animal farming and the environment*. Worldwatch Paper 103. Washington, DC: Worldwatch Institute.
- Edwards, B., and A. Ladd. 2000. Environmental justice, swine production and farm loss in North Carolina. *Sociol. Spectrum* 20: 263–290.
- Etzioni, A. 1996. The responsive community: the communitarian perspective. *Am. Sociol. Rev.* 61:1–11.
- Fallding, H. 2000. A look at pigs in a poke. *Winnipeg Free Press* August 15.
- Fowke, V. 1957. *The national policy and the wheat economy*. Toronto: University of Toronto Press.
- Freese, B. 2000. *Pork powerhouses 2000. Successful farming on line*. www.agriculture.com/sfonline/archive
- Friedman, H. 1991. Changes in the international division of labor: Agrifood complexes and export agriculture. In *Towards a new political economy of agriculture*, ed. W. Friedland, L. Busch, F. Buttel, and A. Rudy, 65–93. Boulder, CO: Westview Press.
- Friedman, H. 1998. A sustainable world food economy. In *Political ecology: Global and local*, ed. R. Kell, D. Bell, P. Penz, and L. Fawcett, 87–101. London: Routledge.
- Giddens, A. 1990. *The consequences of modernity*. Cambridge, UK: Polity Press.
- Giddens, A. 1994. Living in a post traditional society. In *Reflexive modernization*, ed. U. Beck, A. Giddens, and S. Lash, 56–109. London: Sage.
- Gould, K., A. Schnaiberg, and A. Weinberg. 1996. *Local environmental struggles*. Cambridge, UK: Cambridge University Press.
- Granovetter, D. 1985. Economic action and social structure: the problem of embeddedness. *Am. J. of Sociol.* 91(3):481–510.
- Hamilton, N. 1994. Agriculture without farmers? Is industrialization restructuring American food production and threatening the future of sustainable agriculture? *Northern Ill. Univ. Law Rev.* 14:613–637.
- Hannigan, J. 1995. *Environmental sociology: A social constructionist approach*. London: Routledge.
- Harvey, D. 1996. *Justice, nature and the geography of difference*. Oxford: Blackwell Publishers.
- Innis, R. 1999. Regulating livestock waste. *Choices Mag. Food Farm Resource Issues* 14(2): 14–20.
- Jackson, L. 1998. Large scale swine production and water quality. In *Pigs, profits and rural communities*, ed. K. Thu and P. Durrenberger, 103–119. Albany: State University of New York Press.
- Kenney, M., L. Lobao, J. Curry, and W. R. Goe. 1991. Agriculture in US Fordism: The integration of the productive consumer. In *Toward a new political economy of agriculture*,

- ed. W. Friedland, L. Busch, F. Buttel, and A. Rudy, 173–188. Boulder, CO: Westview Press.
- Lipietz, A. 1987. *Mirages and miracles*. London: Verso.
- Livestock Stewardship Panel. 2000. *Sustainable livestock development in Manitoba: Finding common ground*. Winnipeg: Government of Manitoba.
- Manitoba Agriculture. 1995. *Farm practices guidelines for hog producers in Manitoba*. Winnipeg: Government of Manitoba.
- Manitoba Agriculture and Food. n.d. *Pork in Manitoba*. www.gov.mb.ca/agriculture/livestock
- Manitoba Agriculture and Food. 2000. *Technical review reports. Communications from Eastern-Interlake and Southwestern Regions*. Winnipeg.
- Manitoba Clean Environment Commission. 1979. *Report of an investigation of intensive livestock operations in Manitoba*. Winnipeg: Government of Manitoba.
- Manitoba Intergovernmental Affairs. 2001. *Status of planning programs*. Winnipeg: Government of Manitoba.
- Manitoba Pork Study Committee. 1994. *Manitoba's pork industry: Building for the 21st century*. Winnipeg: Government of Manitoba.
- Marbery, S. 2000. Hog industry insider. *Feedstuffs Mag.* September 25.
- Martin, L., Z. Kruja, and J. Alexiou. 1999. *Prospects for hog production and processing in Canada: Update*. Guelph, Ontario: George Morris Centre. www.georgemorris.org/publications
- Miller, D. 1998. *Canadians and the environmental impacts of the hog industry*. Environics International. <http://res2.agr.ca/initiatives/manurenet/en/hems/miller.html>
- Murphy, R. 1994. *Rationality and nature: A sociological inquiry into a changing relationship*. San Francisco: Westview Press.
- Mussel, A., and L. Martin. 2000. *Manure as a public health issue: What accountability and Direction for livestock agriculture. Special report*. Guelph, Ontario: George Morris Centre.
- Qualman, D. 2000. The fight for the family farm. *Q. Rev. Econ. Social Trends Manitoba*, Winter, 1–8. Winnipeg: Canadian Centre for Policy Alternatives.
- Polanyi, K. 1957. *The great transformation*. Boston: Beacon Press.
- Rampton, R. 1999. Manitoba pork board to split in two. *West. Producer* February 25.
- Rampton, R. 2000. Pork top earner in Manitoba. *West. Producer* February 3.
- Redclift, M. 1996. *Wasted: Counting the costs of global consumption*. London: Earthscan.
- Rose, N. 1996. The death of the social? Refiguring the territory of government. *Econ. Society* 25(3):327–356.
- Sachs, W. 1999. *Planet dialectics*. London: Zed Books.
- Sanders, C. 2001. Mitchell residents fighting hog barn. *Winnipeg Free Press* February 2.
- Schiffman, S. 1998. Mood changes experienced by persons living near commercial swine operations. In *Pigs, profits and rural communities*, 84–102. Albany: State University of New York Press.
- Schnaiberg, A., and K. Gould. 1994. *Environment and society: The enduring conflict*. New York: St. Martin's Press.
- Statistics Canada. 1996. *Census of Population 1996: Manitoba Census Divisions and Subdivisions*. www.statcan.ca/english/IPS/Data/95-188-XPB.htm
- Statistics Canada. 1997. *Agricultural profile of Manitoba*. Catalogue 95-178-XPB. Ottawa: Minister of Supply and Services.
- Statistics Canada. 2001. *Livestock statistics*. Catalogue 23-603-XPE. Ottawa: Minister of Supply and Services.
- Tessier, S. n.d. *Manure handling strategies for minimizing environmental impact*. Manitoba Agriculture and Food. www.gov.mb.ca/agriculture/livestock
- Thu, K. 1995. Social issues. In *Understanding the impacts of large scale swine production: Proceedings from an interdisciplinary scientific workshop*, ed. K. Thu, 71–111. Des Moines IA.: n.p.
- Thu, K. 1996. Piggeries and politics: Rural development and Iowa's multibillion dollar swine industry. *Culture and Agric.* 53:19–23.

- Thu, K. and P. Durrenberger. 1994. North Carolina's hog industry: The rest of the story. *Culture Agric.* 49:20–23.
- Torgerson, D. 1999. *The promise of green politics: Environmentalism and the public sphere.* Durham, NC: Duke University Press.
- Weale, A. 1992. *The new politics of pollution.* Manchester, UK: Manchester University Press.
- Webster, M. 1987. Law and odour: Creeping suburbia and the right to farm. *Harrowsmith* 71(Jan/Feb):24–33.
- Wilson, J. 1975. Lisoway, Michael and Lisoway, Caroline and Springfield Hog Ranch. *Queen's Bench* 24 November.
- Yearly, S. 1991. *The green case.* London: Harper/Collins.

