

Lonergan and Corn: The Industrial Food System and the Longer Cycle of Decline

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In a simple yet inexorable fashion, this [good of] order originated by human invention and convention ceases to be an optional adjunct and becomes an indispensable constituent of human living. For the long-run effects of technological advance and new capital formation consist in some combination of increased population, reduced work, and improved living standards. In the course of a century, the differences in all three respects may be so great that any return to an earlier state of affairs is regarded as preposterous and is to be brought about only by violence or disaster. (Lonergan 239)

This paper will explore Michael Pollan's thesis in *The Omnivore's Dilemma* that an inadequate industrial model imposed on the biological rhythms of agriculture and a shortsighted United States government policy of direct payment corn subsidies perpetuates a non-sustainable food system that ramifies in ecological and social decline in the long term. Bernard Lonergan's heuristic account of the emergence of the good of order and the longer cycle of decline provides the philosophical framework to grasp the elements at play in the breakdown of these flexible circles of schemes of recurrence on the technological, economic, and political levels. At its core, the lack of harmonious development within the intelligent and intelligible three-fold levels of society lies in a failure (1) to integrate harmoniously the lower schemes of recurrence into higher orders and (2) to grasp the presence of group and individual bias in the vertical consolidation of food production, processing, and distribution into the hands of a few profit-driven corporations. Regarding the former, genuine progress arising from the technological developments in the 19th and 20th centuries would have to (a) integrate the lower biological manifold and then (b) be integrated themselves into the economic and political. Instead, the surd arises in the technological order by not fully grasping the principle of correspondence in the integration of the biological into the industrial model operative in food production. Regarding the latter, federal corn subsidy

policy and current patent law have been crafted to maximize yield and drive down prices—a policy, Pollan argues, designed to benefit large corporations and to promote the demise of the small farmer and rural community life. After first exploring the myriad negative consequences ramifying through the current milieu, I intend to recount Lonergan’s notion of the development of the good of order. This will enable us to highlight the general bias operative in these two key elements in the current non-sustainable industrial food system. Finally, we will consider the possibility of new emerging schemes of recurrence that seek to reverse the longer cycle of decline. Pollan cites an example of technological efficiency who integrates the biological ‘logic’ of the growth and feeding cycles, maximizing yield in a manner consonant with the biological order and conditioning the flourishing of human community with the good of the political order.

I. Industrial Food

“Measured in terms of output per worker, American farmers...are the most productive humans who have ever lived” (Pollan 34). One farmer can feed 129 Americans—unprecedented in history. We produce enough to feed ourselves and still export millions of tons. But federal policies designed to maintain high production and low prices have detrimental societal impacts. Rural Midwestern towns are disappearing. Thousands each year sellout to corporations after generations of farming the family plot. Diversified, self-sustaining farms that fed entire towns have been replaced by industrial corn factories that maximize yield, but cannot feed anyone without processing. Consider that the fertile state of Iowa must import 80% of its food (34).

Furthermore, this industrial model introduces to the biological order the concept of waste, a notion foreign to an otherwise closed ecological loop (68). When animals live close to crops, the natural byproducts of each can nourish the other. Agriculture feeds the animals while manure fertilizes crops. The cycle is supported by the energy of the sun. Instead, the problems of fertility and waste emerge in an industrial cycle supported by non-renewable petroleum. Meanwhile

between crop cycles, millions of acres lay brown, barren, and ugly, exposed to runoff and erosion for half a year. As a result in the last 200 years, Iowa has lost half of its four feet of topsoil (33). The planting, fertilizing, spraying, harvesting, transporting, and processing of corn demands prodigious amounts of energy. This demand binds American food production to its need for inexpensive, fossil fuel. Industrial food, along with many other demands for energy, requires military pressure on foreign countries to keep oil prices low. Also, the perturbation of the global nitrogen cycle by a surfeit of synthetic nitrogen threatens ecological catastrophe as fertilizer runoff upsets ecosystems and produces excess greenhouse gas (41-47).

The yearly ten billion bushel mountain of corn must constantly call forth new markets of consumption. The 'cheap calories' of high-fructose corn syrup and other refined products have contributed to an emerging epidemic of obesity and diabetes, which itself adds enormous cost to the American health care system. The abundance of cheap corn contributes to the violation of the biological rhythms of a hundred million domesticated cattle, which industrial food growers have consolidated into massive CAFO's (Concentrated Animal Feeding Operations). Cattle are fed contrary to their biology; they are subjected to huge doses of antibiotics to compensate for filthy living conditions (62). All the while, the direct payment federal corn subsidy plugs the gaps left by a non-integrated policy that perpetuates the cycle while steadily depleting the U.S. treasury.

Pollan believes the current historical situation does not sufficiently grasp the factors operative on the biological and communal levels of our society. The utilitarian approach to food in a relatively young nation of immigrants is exacerbated by the lack of a stable cultural cuisine that would otherwise be rooted in a closer spontaneous affinity for the land. Instead, what is needed is an intelligent grasp and control of a flexible circle of schemes of recurrence as complex as our food system at its successive levels and with its numerous factors. We dare not

oversimplify the issue by identifying a single element as a source of the decline, but clearly foundational presuppositions are operative that contribute to current non-sustainable trends.

II. The Good of Order

When the detached and disinterested unrestricted desire to know is free to ask all pertinent questions, new functional relations emerge that facilitate the pursuit of goods of desire:

The practicality of common sense engenders and maintains enormous structures of technology, economics, politics, and culture, which not only separate man from nature but also add a series of new levels or dimensions in the network of human relationships. (Lonergan 232)

As the fisherman improves his craft with the invention of a net, so acts of ingenuity are recurrent and cumulative. Ideas are passed on to improve the procurement of material goods; likewise the instruments of capital perpetuate. As technology differentiates, successive higher integrations of capital formation emerge with subsequent improvements. Meanwhile, the fisherman can keep fishing if someone else commits to net-making—thus the division of labor. As labor and relations among persons differentiate, so the need arises to establish an economic system to balance production, capital formation, distribution, and consumption. Finally, these successive higher integrations of society—technology, economy, and the practical ideas operative in each order’s development—need yet a higher order to bring these people of common sense together. Thus, the political order emerges to deal especially with the powers and groups who specialize in the various levels of the intelligible and intelligent orders in society.

However, objects of desire are not simply animal or egoistic activity. We construct practically intelligent structures to procure the objects of desire. But we are not merely intelligence. We experience another spontaneous dynamic:

Man is an artist. His practicality is part of his dramatic pursuit of dignified living. His aim is not for raw and isolated satisfactions...what he wants is a sustained succession of varied and artistically transformed acquisitions and attainments. (237)

These artistic transformations of biological needs emerge within a primordial human intersubjectivity. From the beginning, we are born into a mother's love and into networks of community that ground a clan, a tribe, a nation. This spontaneous intersubjectivity—a sense of belonging together—humanizes our needs and gathers us into a society. Intersubjectivity grounds the culture as the collective drama of human living finds expression in the community. These intersubjective bonds persist as the schemes of recurrence within society differentiate.

The concrete unfolding of these linked but opposed principles of individual and social change—autonomous intelligence and spontaneous intersubjectivity—are named the communal dialectic. Every determinate, individual act within an aggregate of acts in a community may be traced to either or both of these two principles. Clearly these principles are opposed to each other; yet since they issue from a singular subject, the principles remain inextricably bound together. Finally, a succession of acts will be conditioned by the changes that result from previous acts (242). Even though each act originates from individual persons, this dialectic results in the complex structure of a society.

In society, the duality of the human person's autonomous intelligence and spontaneous intersubjectivity intertwine in the intelligent and intelligible social order. The merely functional aspects of biological exigencies are transformed by the primitive and originary intersubjectivity; this communal sense is evoked in the esteem for one's nation, by the symbolic representation of the group that binds each of us to the sense of the whole. These sentiments, says Lonergan, "are invoked to impart an elemental vigor and pitch to the vast and cold technological, economic, and

political structures of human invention and convention” (238). The spontaneous intersubjectivity which builds civilization will remain even after the humanly constructed polity has passed away.

Nevertheless, the unrestricted desire to know operative in practical commonsense constructs upon the primordial intersubjectivity something new. As technology, economy, and polity differentiate, as the division of labor stratifies persons in groups of varying influence and power, spontaneous community among persons becomes a problem. For now the creations of practical commonsense become a constitutive factor of civil community and exist in tension with original intersubjectivity. This new component of civil society is the ‘good of order’:

For just as technology and capital formation interpose their schemes of recurrence between man and the rhythms of nature, so economics and politics are vast structures of interdependence invented by practical intelligence for the mastery not of nature but of man.

The good of order, therefore,

...consists in an intelligible pattern of relationships that condition the fulfillment of each man’s desires by his contributions to the fulfillment of the desires of others, and similarly protect each from the object of his fears in the measure he contributes to warding off the objects feared by others. (238)

The good of order is not separate from the good of desire. Rather, it is a concrete, real, all-embracing intelligibility, which conditions and orders a society’s pursuit of human attainments of goods of desire. The good of order unifies a community and interlocks the various schemes of recurrence. The unification of the conditioned schemes is the key to understanding the proper functioning of the polity on the one hand, and the breakdown of society on the other. In civil society, the good of order is an essential constituent of human living. Without a doubt, the flourishing of order has dramatically affected the historical situation. Population has increased; work is generally more efficient; living standards have improved. Given these factors, if the technological development and its economic and political integrations were to breakdown, the result would be catastrophic. More positively, however, the good of order contributes to a

flourishing and dissemination of ideas no longer bounded by national borders. The globalization of human community is an emerging good to be grasped intelligently and realized effectively, notwithstanding the difficulty of the task.

Nevertheless, the global reality differs from spontaneous intersubjectivity. The communal impulse underpins the framework on the emerging global scale. A dialectical tension exists between the good of order and our effort to master not only nature, but humanity itself.

Beyond this elementary communion, there are operative in all a drive to understand and an insistence of behaving intelligently that generate and implement common ways, common manners, common undertakings, common commitments. (240)

We have no choice to not want to understand and to implement the ideas issuing from common sense. Also, we have no choice, despite philosophical efforts to the contrary, to live without advertence to our primordial intersubjectivity. These goods, operating on different levels and with different tendencies, comprise the tension of the dialectic of community (241). The intersubjective person cannot sustain intersubjective living without being pulled out of intersubjectivity by his or her questions for intelligence and reasonableness. These two elements—autonomous intelligence and spontaneous intersubjectivity—mutually affect one another. All acts can be traced back to this union of opposites.

Concretely, every intellectual development of the historical situation demands subsequent sensitive and habitual integration by the individual and the group to operate smoothly and in accord with our spontaneous intersubjective affects. The history of civil society can be understood according to the convergence and estrangement between the good of spontaneous intersubjective desire and the general good of order. Sometimes the order corresponds with one's habitual integration, as in 'the good-ol' days,' or when one's identification with the national good is done with ease. In times of crisis, the order of the polity conflicts with the ordering of the

individual. With each subsequent historical situation, there remains a concomitant “reorientation of spontaneous attitudes,” which are subsumed by the unrelenting movement of human intelligence to order one’s affects with the general rules of the intelligent order (242). In that sense, we say that the dialectic of community, itself intelligent and intelligible, holds the generally dominant position over the individual dialectic of intelligence and spontaneous intersubjectivity.

So what happens to the human relationships and to the individual persons when these higher dimensions in society begin to break down? It seems that one may judge the merits of new historical situations based on their consequences for primitive intersubjective community. Developments of progress would not only improve the structures of technology, economy, and polity, but they would also strengthen, or at least facilitate, the bonds of intersubjectivity. Breakdowns of intelligibility, *viz.* elements of decline, which in the short term may provide improvements at various levels, in time will contribute to the estrangement of individual persons and groups. The bias inherent to decline orients persons and groups away from the intelligible and intelligent common good and toward their own individual or group advantage. Social decline would transform the original communal sense of belonging together into a struggle pitting persons with similar practical goals in competition against one another.

Just as statistical residues allow successive orders of intelligibility to be understood and conceived by the knower, so too the presence of the nonsystematic in the good of order precludes reducing every human action into a single, systematic order of intelligibility. In fact, the application of a single method to successive orders has serious detrimental effects on the polity. First, the technological order must be critically appropriated within an historically-minded higher viewpoint. That moving viewpoint preserves the autonomy of lower organic manifolds and integrates them within the individual and community dialectics. On the other hand, a

technocratic ideology that advances industrial efficiency threatens to reduce lower, biological manifolds and higher intersubjective orders to a counterpositional industrial model that understands reality as a subdivision of the already-out-there-now.

Secondly, the political order must govern the ideas that emerge in different groups. Ideas occur to the person in the field. These ideas may benefit a particular group closely related to the person with the insight. The probabilities of a genuine development in the lower manifolds of vital living and the technological and economical manifolds are increased when experts in a field grasp new intelligibilities that could potentially benefit the entire society. The political order seeks the common good by promoting the generalization of a genuine development. More concretely, a political order that would integrate the systematic and non-systematic elements of the economic order would recognize the dialectic of class struggle and allow for the reaction from a disadvantaged group to balance out the advantage of the group with the good idea and the means to implement it. On the other hand, a shortsighted, biased government policy would overextend this class dialectic and bestow competitive advantage on one group to the detriment of the other. Certainly, a farm policy that favors large corporations at the expense of rural farming communities fits within the heuristic structure of general and group bias.

Cognizant of the primordial and originary communal dialectic—autonomous intelligence and spontaneous intersubjectivity—in the good of order, and aware of possible successive lower viewpoints when counterpositions reduce various manifolds to a single order of intelligibility, we may now consider the fact of technological development and integration as a function of intelligence. Then we will consider the government action on the political order that has affected the spontaneous intersubjectivity as it has devolved on the higher order as a function of group and general bias.

III. Technological Integration

At the pivotal moments in the history of the American food system, a technological innovation was followed by a subsequent higher integration in the economic and the political situation. We can understand heuristically these integrations in the higher levels of intelligible order by adverting to the principles of the genetic method. Let us define some terms: The two key principles of genetic method are the principles of emergence and correspondence. First, the principle of emergence: “Otherwise coincidental manifolds of lower conjugate acts invite the higher integration effected by higher conjugate forms.” Second, the principle of correspondence: “Significantly different underlying manifolds require different higher integrations.” Emergence and correspondence are situated within the general principle of finality, which states that “the underlying manifold is an upwardly but indeterminately directed dynamism towards ever fuller realization of being.” These principles finally allow us to understand the heuristic structure of genetic method, the principle of development, which is “the linked sequence of dynamic higher integrations” (477-478). The intelligibility intrinsic to proper development demonstrates the metaphysical principle about successive higher explanatory genera:

Each higher genus is limited by the preceding lower genus. On the one hand, it must not interfere with the autonomy of the lower order, for if it were to do so, it would destroy its own foundation. On the other hand, the higher genus is a higher systematization of manifolds that would be coincidental on the lower level; and a higher systematization is limited by the manifolds which it systematizes. (468)

The coincidental manifold of biological events that yields food for a society may be integrated into a larger technological and economic system of production and distribution. Pollan concludes, however, that the industrialization of food has itself interfered with the lower genus of biology to the extent that industrial food is “destroying its own foundation.” Because of certain short-sighted preferences that privileged simply the criteria of efficiency and yield, specific technological innovations were not intelligently integrated by the higher schemes of the

economic and political orders. The failure of the higher orders to ask all further pertinent questions regarding the environmental and biological manifolds set the conditions for this failure of industrial food to fully integrate the autonomous biological order. The simplification of the biological occurs when access to cheap fossil fuel tends to exclude further questioning toward the full generalization of the higher orders and the full integration of the lower. This general bias of commonsense introduces lacunae downward into the lower manifolds of modified biological processes and upward into the common good of society.

3.1 Technological Innovation

The evolution of corn itself has made the plant an ideal crop for a capitalist society, which would explain its proliferation in free market, industrial economy. Corn is one of the most efficient ways to produce a lot of food energy in a limited space. The biology of its fertilization allows humans to intervene in the process with ease and to develop new hybrids by cross-pollinating corn varieties to produce desirable characteristics. Also, the genetic uniformity and uprightness of hybrid stalks make corn amenable to mechanization. Furthermore, while hybrid seeds tend to produce higher yields than either of their parents, second generation hybrid seeds decrease yields by one-third; these diminishing returns allow the crop to be controlled by private corporations. Finally, the virtual indestructibility of corn kernels make it an ideal commodity: “Easy to transport and virtually indestructible, corn’s dual identity and food and commodity has allowed many peasant communities that have embraced it to make the leap from a subsistence to a market economy...Corn is the protocapitalist plant” (Pollan 26).

At the end of the nineteenth century, European countries believed that the human population would soon eclipse the earth’s capacity to provide enough food to feed us. They realized the process of nitrogen fixation in grasses, legumes, and lightning strikes could not sustain the level of food growth necessary for a modern industrial society with its population

boom. To this end, the discovery of synthetic nitrogen in 1909 by Fritz Haber fundamentally altered the way of life on earth in the 20th century. The Haber-Bosch process of fixing nitrogen allowed for the creation of synthetic fertilizer, which allowed the population to increase by billions.¹ The emergence of synthetic nitrogen radically changed human methods of farming, which had depended on the energy of the sun for thousands of years.

“When humankind acquired the power to fix nitrogen, the basis of soil fertility shifted from a total reliance on the energy of the sun to a new reliance on fossil fuel” (44). Nitrogen fixation requires prodigious amounts of electricity to achieve the levels of heat and pressure needed to combine hydrogen gas supplied by oil or coal with otherwise nonreactive nitrogen gas.

*We can easily imagine a world without computers or electricity...but without synthetic fertilizer billions of people would never have been born. Though, as [this] number suggests, humans may have struck something of a Faustian bargain with nature when Fritz Haber gave us the power to fix nitrogen.*²

At the end of World War II, the United States government had a surplus of ammonium nitrate, the principal ingredient for explosives and a great source of nitrogen for plants. The Department of Agriculture decided the most effective means to dispose of the chemical was to spray it on farmland as a fertilizer. When crop yields multiplied dramatically, munitions plants easily switched over to producing the same chemical for the peaceful purpose of food growth.

Liberated by the constraints of naturally occurring nitrogen—and combined with the invention and proliferation of the tractor—agriculture was free to develop on industrial principles of efficiency, production, and yield. Previously, the farm required animals and crop rotation to preserve the fertility of the soil. Now, synthetic fertility eliminated the need for animals and

¹ In addition to its potential for new sources of fertility, the same insights allowed for technological advancements in war technology. Haber helped Germany in World War I to continue making explosives. He also developed the first wartime poisonous gases and later Zyklon B for use in concentration camps in WWII. These dual advances, for food and for destruction, demonstrate the need for higher intelligible and moral integrations of the technological order into the political order.

² Pollan 43. See Vaclav Smil. *Enriching the Earth: Fritz Haber, Carl Bosch, and the Transformation of World Food Production*. (Cambridge, MA: M.I.T. Press, 2001).

increased the farmer's ability to grow profitable commodity crops with minimal rotation. (In fact, the eventual development of soybeans and a profitable means of soybean processing made the nitrogen-rich legume the second leg in the industrial model of crop rotation.) The path to the monocultural farmstead was clear, and agriculture continued the shift away "from the logic of biology [to] embrace the logic of industry. Instead of eating exclusively from the sun, humanity now began to sip petroleum" (Pollan 45).

3.2 Effects

But as supply increased, market prices dropped. At each turn, farmers decided to grow more corn. This transformation led to ecologically unwise land cultivation, which hastened soil erosion, fossil fuel runoff, acid rain, and the release of greenhouse gases. Scientists discovered later that the petroleum-based industrial food model, while increasing yields in the short term, overall produced a net energy loss. Pollan explains that to grow, fertilize, harvest, and transport one calorie of food energy, greater than one calorie of fossil fuel energy is needed (45-46). This figure does not consider the energy needed to process the corn into edible forms as meat and high-fructose corn syrup. Such an ecologically inefficient model pales in comparison to the biological model where one calorie of sunlight yields nearly two calories of food energy. Granted, the biological sun-driven order takes longer and produces smaller yields of profitable commodity crops within a polycultural farm. But the presence of cheap fuel (assured by the hidden cost of American political and military influence on foreign nations), combined with the general bias of successive practical commonsense decisions by farmers who reap the benefits of higher yields at less cost, leads everyone complicit in the industrial food system to disregard the huge ecological expense grasped only over the long term.

Industrial food maximizes production on the smallest plot of land at the cheapest price. Industry's preference for efficiency, simplicity, and profitability tends to exclude biological

rhythms, which are slower, more complex, and not immediately bound to the bottom line. This totalizing, reductive principle becomes self-enclosed and incapable of thinking except in terms of its own systematicity. Biological rhythms become problems to overcome, not intelligibilities to integrate. The autonomy of the biological order is subverted when it is evaluated from the concrete principles of the higher intelligent order of industrial technology, which, as Lonergan noted, “would destroy its own foundation” (468). Instead, when a systematic problem arises, industrial food responds on the level of the industrial. For example, cheap surpluses of corn allow for the consolidation of cattle into CAFO’s. When animals get sick because overcrowding, the preponderance of feces, and improper grain diets expose them to E. Coli infection, instead of effecting biological changes, viz. reducing population density or providing a diet of grass for ruminant cattle, industrial food responds with industrial solutions, viz. a glut of antibiotics and post-slaughter chlorination treatments on potentially infected meat (Pollan 65-84).

Industrial innovation tends toward the simplification of jobs within the division of labor. On the other hand, to grasp the biological rhythms demands greater intelligence from the farmer regarding local geography and biological rhythms of a diverse polycultural system. Industrial farming tends toward systematic, procedural schedules of planting, fertilizing, and spraying that countermand these complexities. Technological innovation—whether GPS systems on combines, precision fertilizer application, or no till planting—cannot equal the sort of practical commonsense required of a farmer to master the biology of complex polyculture.

No one will deny that higher industrial efficiency yields positive effects in the short run. To date, the economy and polity have managed to adapt with varying success to the rapid agricultural growth in the past century with its ecological demands.

The functioning of the higher integration involves changes in the underlying manifold, and the changing manifold evokes a modified higher integration. There obtains the law of effect, for development occurs along the directions in which it succeeds. (Loneragan 495)

Industrial food sets the conditions for eventual failure when it oversimplifies the biological order, a dynamic order more complex than our understanding can grasp. Each time we intervene in the biological order, history reveals the myriad consequences—foreseen and unforeseen. For example, the overuse of antibiotics leads bacteria to adapt into more destructive forms. Most recently, farmers are reporting the emergence of Round-up herbicide resistant weeds.³ The unforeseen consequences require further short term fixes by commonsense. As a result, the situation is farther and farther removed from its biological manifold. Also, each industrial innovation tends to add further expense and new demand for energy, demanding further economic and political adaptation. Some wonder, however, if the rapid pace of technological, industrial innovation will continue indefinitely. How does the industrialization of food impact the original intersubjectivity? Will the individual person and the smaller groups within the polity be able to adapt to the changing demands of a global food system, or will the situation alienate us completely from our original spontaneous intersubjectivity?

IV. Government Agriculture Policy

Similarly, the industrial simplification of the biological order of food ramifies upward to disregard the health of an intersubjective community. The exponential increase in industrial food production and the ability to transport goods over long distances permits the wider distribution of food on the global scale, setting the conditions for major changes in the composition of societies. Persons are mobile, moving farther distances for employment. National economies increase their

³ See Neuman, William and Andrew Pollack. "Farmers Cope With Round-up Resistant Weeds," New York Times, 3 May 2010. 4 May 2010 <<http://www.nytimes.com/2010/05/04/business/energy-environment/04weed.html>>.

interdependence, so that the “plague of cheap corn” unleashed by U.S. policy impoverishes economically vulnerable agrarian nations (Pollan 47). Regional divisions of labor become less diversified, making cities and minority groups vulnerable to drastic shocks to the market. The population declines in Midwestern rural communities and the consolidation of landownership into the hands of corporations is evidence of sweeping political changes in the structure of the polity. Political decisions shaped by technological realities risk reducing individual persons and communities to their economic relations and capacities for consumption. Corporations consider capital and labor as two equal considerations subjected to the ultimate concern for profitability.

Seen from the perspective of the ecological and cultural inefficiency of industrial food, one wonders why the ever-increasing social surd does not induce us to reverse these cycles of decline by establishing new schemes of recurrence that harmonize the lower manifold of the biological with the higher order of the polity. Why not recognize the communal whole that unifies and humanizes every agricultural act—from the planting of grain, through its harvest and distribution, to its eventual consumption in myriad forms at a dining room table? As Wendell Berry famously said, “Eating is an agricultural act” (Berry 321). On the other hand, since higher order integrates lower manifolds, an insufficiently critical practical commonsense subordinated to the totality of questions of intelligence and of reflection is likely to appropriate the same reductive, totalizing instrumentality of industrial food into the economic and political order.

The surd perpetuates because current government policy prefers the pragmatic, shortsighted aspects of profitability and economic advantage of large corporations who benefit from cheap commodity corn. The government’s main tool to perpetuate the industrial food cycle against the rhythms and logic of the biological order is the direct payment corn subsidy. Also contributing to the general bias of the government is the use of the intellectual patent on genetically modified organisms (GMO’s) and the commodification of grain. When seed

companies are able to patent their hybrid seeds, they prevent individual farmers from “seed saving” as a cost-saving measure. Instead, farmers must depend on corporations from year to year for seed, lest the company sue for patent infringement and later refuse to sell seeds to the farmer. Also, the commodification of corn (and other commodified grains) reinforced by a system of grain elevators and railroad transportation in the Midwest, makes growth and distribution of any other crop virtually impossible.

Most importantly, however, the advent of direct payment corn subsidy has contributed more to the flourishing of corn and the disappearance of biological diversity in the industrial food system.⁴ From year to year, bountiful and lean harvests alike pose economic problems for farmers. Abundant harvests lower prices, while lean years raise prices. Communities dating back to the Old Testament have established grain reserves to protect themselves from famine or from price fluctuations. During the Great Depression, too much corn on a weak market caused the price of corn to drop to zero, which ruined many family farms. In response, the New Deal implemented policies to protect farmers from irregularities in farming cycles and to protect sensitive farm land from soil erosion and overproduction. The government established a target price on commodity crops to protect the farmer from having to sell below his production and living cost. When the market was weak, the farmer could take a loan from the government, offering his crop to the government as collateral. When prices recovered, he could sell his corn and pay back the loan; if prices did not recover, he could keep the money and give the grain to the government to store in the “Ever-Normal-Granary.” In poor harvest years, the government could release its grain onto the market to keep prices reasonable and to pay for its own programs.

Even as yields gained rapidly with technological improvements, this system of price control functioned more or less well for forty years. It recognized the distinct manifold of

⁴ See Pollan 47-56.

agriculture to be integrated into a market economy. As one farmer advocate says, “The free market has never worked in agriculture and it never will. The economics of a family farm are very different than a firm’s.”⁵ Nevertheless, this policy was opposed with steadily increasing intensity by laissez-faire economists, who wondered why commodity crops were to be treated differently from other markets. The opposition found the occasion to deconstruct the policy in the 1970’s when the price of corn spiked after Russia purchased 30 million tons of American grain to combat their own devastatingly low yields. When inflation reached the supermarkets and feedlots a year later, President Nixon assuaged angry consumers and laissez-faire economists alike when he charged the Department of Agriculture to reengineer the American food system.

The government could drive down the price of corn by converting to a policy of direct subsidy payment. By subsidizing each bushel grown, farmers would be encouraged to ramp up production. Farmers would “get big or get out.”⁶ The government would compensate the gap between the market price and the determined target price with a check written directly to the farmer. In the short term, it seemed hardly significant to switch to direct subsidy, especially since the farmer could earn his target price either way. But the direct payment method effectively removed the price floor from beneath the farmers. Farmers would sell corn at any price, and the government would compensate them. However, since each farm bill has lowered the target price, farmers have been forced to increase production to compensate their losses. The spiral of overproduction and plummeting prices continues. Today, the government pays nearly five billion dollars yearly in direct subsidies, nearly half of the total farm income. And as prices drop, major corn purchasers like Cargill and Archers Daniels Midland (ADM) profit greatly.

⁵ Pollan 54, quoting George Naylor, president of the National Family Farms Coalition and an Iowa corn farmer. Naylor has testified against direct payment subsidies to Congress. Without a doubt, federal agriculture policy is a complex topic. The broad arguments are germane for our topic to highlight the presence of group and general bias in agriculture.

⁶ Pollan 51-52, quoting Earl Butz, secretary of agriculture in the Nixon Administration who led the efforts to restructure the subsidy policy.

An economic policy that considered climate variations and environmental conditions affecting market price and land fertility over the long term was finally eclipsed by short term concern for corporate profits and consumer prices. We can understand this dynamic by appealing to Lonergan's notion of practical commonsense of a community dispersed among the various members of social groups. Ideas for development occur to specialists. If the unrestricted desire to know of a pure intelligence were allowed to expand to its proper generality, then these ideas could contribute to an uninterrupted, continuous progress. But there is a lag between intelligence and the sensitive adaptation of new intelligent schemes by individuals and groups:

In fact, the responses are made by intelligences that are coupled with the ethos and the interests of groups, and while intelligence heads for change, group spontaneity does not regard all changes in the same cold light of the general good of society...Thus group bias leads to a bias in the generative principle of a developing social order. (Lonergan 248)

This group bias leads Lonergan to introduce a further distinction within the original evaluation of practical insights and merely bright ideas. In the presence of group bias, practical insights may be judged operative or inoperative. This distinction judges whether or not ideas are implemented by groups with the requisite power, or at least are not opposed by powerful groups. As groups seek to act in general for their own advantage, excellent ideas for development become distorted by compromises and defensive group tactics who place their own interests over the completely generalized good of order. Since groups differ in talent and opportunities, society becomes stratified, classes become distinguished, and resentment between classes manifests.

In addition, the realized social order "does not correspond to any coherently developed set of practical ideas" (249). The failure of group bias to permit the generality of ideas with a full retinue of further pertinent questions for proper integration leads to a radical distortion of the good of order, which over time, becomes obvious to all groups of society. The unrestrictedness of inquiry and reflection does not come immediately, and only rarely in its full generality, to

individuals. Intellectual development lags behind sensitive development, which means we are often concerned only with the concrete and particular. Thus the objective social surd reinforces each member of the group of farmers in his individual bias. Each farmer feels compelled to defy biological logic, and so he overproduces to meet the concrete exigencies of supporting a family, servicing his debt, and maintaining his ability to keep farming. If he acts against the current system—by diversifying crops, idling plots of land, saving seed—he risks losing his subsidy or faces a patent lawsuit from wealthy seed corporations. Either way, he threatens his livelihood. The higher political order does not permit him to integrate his farming practices into the ecological and intersubjective communal orders.

The actions of group bias create the conditions for the reversal of the aberrations of order located in a particular group. The sentiments of the group not benefiting from the success of the idea will demand justice. This distorted dialectic between the unsuccessful and the successful for material well-being calls for economic and political change. “Such change is apt to be viewed simply as a necessary means for attaining more palpably beneficial ends” (252).

When action on the technological, economic, and political orders is effected simply as a practical, concrete “fix” for a larger problem—and is not subjected to a critical inquiry guided by human history that considers the totality of consequences grasped only in the longer cycle—a longer cycle of decline emerges with successive less comprehensive viewpoints. The continual regard for the concrete by non-subordinated practical commonsense corrupted by group and individual bias may be called general bias. Lonergan’s particular understanding of human history, which is articulated within the framework of emergent probability, can reveal the presence of general bias. History is “the cumulative realization of concretely possible schemes of recurrence in accord with successive schedules of probabilities.” Each successive social situation has as much intelligibility as was put into it by the preceding generation. Not only does “man

turn to transforming his environment in his own self-development,” but also intelligent humans are capable of “contributing to the control of human history.” Practical commonsense itself is incapable of such control, and therefore will continue to contribute to social decline unless it is subordinated to the higher viewpoints governed by an historical world-view within generalized emergent probability (251-261). In fact, practicality is biased against theoretical questions about the longer cycle, dismissing them as idealized, impractical, or implausible. One hears such objections from individual farmers burdened by debt and worry or from Cargill executives who speak of the exigencies of ‘food security’ or consumer prices.

The social situation becomes disoriented as each group focuses exclusively on its own practical domain. It becomes less intelligible as a coherent whole. As individuals and groups confine themselves to their own needs, society cumulatively deteriorates. Culture and religion become idealized, personal affairs with no significance for the “real” world of practicality. As successive lower viewpoints eclipse previous coherent intelligibilities, what results is the “social surd,” which is an “increasingly significant residue that (1) is immanent in the social facts, (2) is not intelligible, yet (3) cannot be abstracted from if one is to consider the facts as they are” (255).

In the longer cycle of decline, the political order devolves from its originary function of generalizing the good ideas that emerge from specializing individuals and groups for the benefit of the common good. Instead, politics is overcome by group bias as it permits successful groups to implement good ideas to their own advantage and to defend themselves from unsuccessful groups clamoring for material justice. The principle of finality, in its upward but indeterminate dynamism toward greater intelligibility of being, ceases its upward movement and gets mired in a set of practical, concrete decisions in the here and now with half-baked ideas, compromises between self-interested groups, and insufficiently integrated schemes of recurrence.

Just as social progress demands subsequent sensitive adaptations by groups and individuals on the lower orders, each successive lower viewpoint in social decline affects these lower manifolds of spontaneous intersubjectivity. Such is the heuristic structure of general bias within human history. Since the good of the intersubjective, intelligent individual and the good of the social order is a dialectic, not surprisingly the failure to consider both goods with regard to practical intelligence would create a new tension in the social milieu.

But no matter how full the success, the basic situation within the self is unchanged, for the perfection of the higher integration does not eliminate the integrated or modify the essential opposition between self-centeredness and detachment. The same 'I' on different and related levels of operation retains the opposed characters. (499)

When higher systems are operators—systems on the move—they change the lower manifolds. However, no development of community can leave behind the individual dialectic. When social order appropriates the industrial model on the economic and political level, society consistently exacerbates the individual dialectic, and creates a situation where the polity separates us from one another, alienating us from our spontaneous intersubjectivity. Such a polity destroys the bonds of community on the lower level, viz. rural community, especially since each higher order enjoys greater freedom from limitation. “In this fashion, the objective social surd will be matched by a disunity of minds all warped but each in its private way” (258).

From this heuristic account, a context emerges that explains why a farmer overproduces to his own demise. Overwhelmed by a system that he cannot resist without losing his livelihood, the farmer puts up with the situation and minds his own business, even as the system slowly lowers the subsidy target price and squeezes him off of his land. We also recognize why bias helps the industrial food system to continue its non-sustainable course while polluting the earth, depleting the treasury, and destroying small communities. Pollan notes how in the past thirty

years, major seed corporations like Cargill and Monsanto have been able to collaborate with the government to craft the rules of agriculture to their own favor and to the detriment of the farmer.

V. New Emerging Schemes of Recurrence

We may despair for our society when the social surd prevails on the technological, economic, and political levels, making the reversal of the longer cycle of decline seem impossible. As commonsense is incapable of rising above general bias by itself, to reverse the political breakdown with political means may seem like rearranging deck chairs on the Titanic. But just as partially realized ideas that allow a group to succeed in the short term call forth their more complete realization in the reaction from unsuccessful groups, so too the longer cycle of decline leaves open the possibility for altogether new schemes of recurrence to emerge within society to undo the negative effects of decline and to effect a recovery within the community.

[T]here is a convergence of evidence for the assertion that the longer cycle is to be met, not by any idea or set of ideas on the level of technology, economics, or politics, but only by the attainment of a higher viewpoint in man's understanding and making of man. (Lonergan 258)

Within the social surd, individual persons search for ways to integrate the biological manifold into a food network that integrates the needs of a modern society while remaining open to the totality of factors of food. Pollan introduces us to Joel Salatin and Polyface Farms, a man who integrates the natural rhythms of animal biology into a profitable, efficient, community-oriented polycultural farm (123-133). Salatin embodies Lonergan's insight that recognizes that the good of order is now "an indispensable constituent of human living" (Lonergan 239). Salatin acknowledges 21st century exigencies to feed a global population of nearly seven billion. The reductive industrial food model which has influenced economic and political policy tends to approach the food crisis in isolation, evaluating the problem in terms of food output and

distribution.⁷ However, Salatin asks the further questions that consider the long range impact of industrial food, not in terms of production, but in terms of health: the health of the environment, the health of the human body, and the health of human spontaneous intersubjectivity.

Salatin establishes new schemes of recurrence within the local community to help reverse the longer cycle of decline. He rejects the shortsighted economics that minimizes food cost by minimizing the cost of food production. Contrary to the industrial model that maintains the economy of scale by adding synthetic fertility to increase output to maximize profit, Salatin preserves the economy of scale on the biological level. He does not seek to maximize profit by growing his output beyond the capacity of his land to produce naturally. But when the land is allowed to support a complex of different species, the total quantity of production remains competitive with prevailing monocultural industrial methods. Permitting the unrestricted desire to know to ask the further pertinent questions, Salatin makes value judgments according to every factor of intelligibility on every order. The good is not restricted to the technological and economic. Instead, the intelligibility of each order is to be considered. Salatin's polycultural farm rotates cattle, pigs, and chickens on grasslands while growing different crops cycled according to healthy principles and fertilized by the manure and compost produced by the animals. Instead of countermanding the natural functions of his crops and animals, Salatin imposes intelligible and intelligent human order onto his farm by efficiently enabling his livestock to do what they do

⁷ See Robert Paarlberg, "Attention Whole Food Shoppers," *Foreign Policy*, May/June 2010. 30 April 2010 <http://www.foreignpolicy.com/articles/2010/04/26/attention_whole_foods_shoppers?page=full>. Paarlberg argues that the "green movement" is a luxury of the "pampered West" that has severely damaged the third world by not providing access to high yield GMO's and industrial infrastructure. While he rightly criticizes the shortsightedness of evaluating food crises according to international prices and not according to actual hunger, his solution also neglects the biological and communal rhythms of agriculture. However helpful the industrialization of farming may be for emerging nations, the dissemination of the Western status quo without a critical appropriation of technology will continue to exacerbate the social surd.

naturally. Instead of depleting the resources of his land at each turn, Salatin's land gains new fertility as the biological cycles of farming are consonant with the fertility of the land itself.

A multiplicity of plant and animal species growing in an intelligible and intelligent order makes the farm less susceptible to natural and economic crises. When animals act in accord with their nature, they are less susceptible to illness. By adhering to the biological rhythm of his farm, he does not intervene in the biological with industrial remedies with their unforeseen consequences. Also, with zero synthetic input, his farm minimizes its dependence on fossil fuel.

Salatin realizes that food is inherently a communal reality, and that a singular integrated food system extending too far beyond the local level weakens the bonds of intersubjectivity and renders the original community unintelligible. This viewpoint preserves the complexity of the lower manifolds of communities by not acquiescing to a total centralization of technological, economic, and political control. Instead, Salatin sells his nutrient-dense food locally, thus preserving community involvement and again reducing the need for fossil fuels to transport his food. In the principle of development, the operator is the integrating system on the move toward greater intelligible order. Salatin is conditioning a new, emerging scheme of recurrence of locally grown, 'natural food' that recognizes the value of preserving the intelligible order of food production within, not despite, the complex interrelations of local community. Salatin preserves the dialectic of the individual within the dialectic of community.

VI. Conclusion

Michael Pollan adverts to his intellectual predecessors, who articulate this alternative vision, not in industrial terms of output, but in biological terms of health: "[Wendell] Berry seized particularly on [Sir Albert] Howard's arresting—and prescient—idea that we needed to treat the 'whole problem of health in soil, plant, animal, and man as one great subject'" (145). The coincidental manifolds of these new locally grown natural farms are potencies for new

development according to the principle of correspondence, which says “significantly different underlying manifolds require different higher integrations” (Lonergan 477). The exigencies of the contemporary historical situation demands a food network to meet the needs of a rapidly increasing population. To conceive a complex network that is local, organic, and ‘slow’ without advertent to the full generality of such exigencies, as Paarlberg understood, is to set the conditions yet again for non-sustainable collapse. But we are not condemned to an industrial model that will inevitably deplete the land of its fertility and irrevocably damage the world’s ecosystem and the nation’s economy. That is why an intelligent grasp of the successive manifolds may aid human persons in the creation of more intelligible orders that advance the cause of progress and are not restricted by idealized longings for simpler times.

On the other hand, the real problem underlying the social surd manifested in industrial food and government is rooted in something more fundamental. The inevitable lag of intellectual development in the person is compounded by the moral impotence of the individual to establish the requisite universal antecedent willingness of full effective freedom which alone is capable to implement fully intelligible human structures in the world. Conversely, the social surd provides this problem of liberation with “its continuity, its aggravation, its cumulative character” (Lonergan 654). Moreover, this problem of liberation is “radical and permanent” (655). For this reason, we understand that “a revolution can sweep away old evils and initiate a fresh effort; but the fresh effort will occur through the same dynamic structure as the old effort and lead to essentially the same results” (654). Hence, the solution cannot be simply to erect new external schemes of recurrence like Salatin’s local, polycultural farm and presume it to solve the problems of community and power in our own society. Neither Salatin nor Pollan presume their criticisms of industrial food to be the cure-all. The solution to the problem, as Lonergan declares, must be a “still higher integration of human living” that “takes people just as they are,” and does

not subject their intelligence, reasonableness, and freedom to coercive measures (655). The problem must be confronted within the heart of every man and woman. It must entail a dialectical attitude of intellect that grasps by inverse insight the unintelligibility of the social surd, and it must entail a dialectical attitude of will that returns good for evil, willing the order of the universe with self-sacrificing love where there was before no intelligibility.

Nevertheless, if the dialectic of community sets the conditions for the development of the individual person within his or her own internal dialectic, then efforts like Salatin's and Pollan's may set the conditions for the retrieval of genuine human intersubjectivity. "Food is an agricultural act"; indeed, it is a *cultural* act that connects the entire sweep of proportionate being from its highest human developments of human living, through humanity's biological exigencies, all the way down to our primordial relation to the earth. As religious traditions bind the community together and orient humanity toward its transcendent end through the sanctification of a shared meal, so too the retrieval of the full human intelligibility of our networks of food may allow us to confront once again our own human finality. Through our own human development in a community, the universe of proportionate being becomes intelligible to itself, and finally, "apart from the surd of sin, the universe is in love with God...the man of good will is in love with God" (721).

Works Cited

Berry, Wendell. "The Pleasures of Eating." Berry, Wendell. The Art of the Commonplace. Ed. Norman Wirzba. Washington, D.C.: Shoemaker & Hoard, 1989. 321-327.

Lonergan, Bernard. Insight: A Study of Human Understanding. Ed. Frederick Crowe and Robert Doran. 5th edition. Vols. Collected Works of Bernard Lonergan, Vol. 3. Toronto: University of Toronto, 1992 [1957].

Paarlberg, Robert. Foreign Policy. May/June 2010. 30 April 2010
<http://www.foreignpolicy.com/articles/2010/04/26/attention_whole_foods_shoppers?page=full>.

Pollan, Michael. The Omnivore's Dilemma: A Natural History of Four Meals. New York: Penguin, 2006.