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The Ethics of Constrained Choice: How the Industrialization of Agriculture Impacts Farming and Farmer Behavior

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**The Ethics of Constrained Choice: How the Industrialization of Agriculture
Impacts Farming and Farmer Behavior**

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ABSTRACT: The industrialization of agriculture not only alters the ways in which agricultural production occurs, but also impacts the decisions farmers make in important ways. First, constraints created by the economic environment of farming limit what options a farmer has available to him. Second, because of the industrialization of agriculture and the resulting economic pressures it creates for farmers, the fact that decision are constrained creates new ethical challenges for farmers. Having fewer options when faced with severe economic pressures is a very different situation for farmers than having many options available. We discuss the implications of constrained choice and show that it increases the likelihood that farmers will consider unethical behavior.

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I. Introduction

We are interested in how the industrialization of agriculture has altered the ways in which agricultural production occurs and the ways these new production systems impact farmer-level decision-making in ethically important ways. First, constraints created by the economic environment of farming limit what options a farmer has available to him. For example, poultry production contracts restrict the abilities of producers to adopt alternative production practices, such as production techniques that are environmentally friendly (Hinrichs and Welsh 2003). Thus, producers who otherwise would have adopted environmentally-friendly production practices are restricted from doing so. Similarly, the genetic modification of seeds coupled with restrictive licensing requirements imposed by technology companies limits the ability of farmers to practice traditional farming activities, such as saving seeds or cross-breeding plants to develop seed varieties that are efficient for local environmental conditions. Moreover, because the use of GM seeds is becoming more prominent in agriculture, the distribution outlets for farmers who choose not to plant GM seeds are being limited, thus constraining how non-GM farmers are able to market their crops. We discuss the ethical implications of such constraints created by the industrialization within the agricultural system.

Second, because of the industrialization of agriculture and the resulting economic pressures it creates for farmers, the fact that decisions are constrained creates new ethical challenges for farmers. Having fewer options when faced with severe economic pressures is a very different situation for farmers than having many options available. We argue that growing constraints in decision-making, coupled with increases in the economic pressures farmers face, will cause an erosion on the ethical attitudes and behaviors of farmers. We discuss evidence that

the ethics of farmers is eroding and explain how the erosion of farmer ethics is explained in part by their inability to make the types of decisions farmers made in the past.

II. The Competitive Market place for Farmers

Industrialization, characterized by standardization, mass production and specialization, has been progressing the entire 20th century in most economic sectors of the U.S. economy. However, while it did not really become visible in agriculture until after the Second World War, it progressed rapidly the second half of the century. “California Agriculture” – the production of vegetables under contract – showed the first signs of industrialization in the first half of the century. The process became most apparent in animal agriculture in the production of broilers in the late 1950s – characterized by production contracts and vertical integration. Increasingly broilers were removed from open markets because the stages of feed production, broiler production and broiler processing came under control of the same firm. Industrial size processing facilities focused on mass production and a global marketing network required a huge amount of capital. This led to the development of large, well-financed corporations and a growing concentration of capital and control in the food and agricultural system. Those responsible for the actual production of food products – farmers, farmer workers, and food processing workers – have been increasingly deskilled in the process, removing more and more decisions from the actual point of production.

II.1. Concentration in agriculture from genes to markets

At the University of Missouri, Heffernan, Hendrickson, and Gronski (1999) have tracked changes in markets for major Midwestern agricultural commodities since the mid-1980s. Almost

all markets, except ethanol, have become increasingly concentrated. When four or fewer firms control 40 percent or more of an industry's market, that sector loses characteristics of a competitive market.

Today's U.S. farmers face concentrated markets for both their inputs (seeds and chemicals) and their products (crops and livestock). Five firms dominate the genetics for most of the crops that are grown world-wide – Bayer (after acquiring Aventis), Monsanto, DuPont (owner of Pioneer), Dow and Syngenta (a merger of the seed divisions of Novartis and Astra Zeneca). These genetic firms were able to capture their dominant position after intellectual property rights (IPRs) were given to firms and products of biotechnology were becoming commercially available. In theory, IPRs are important to get firms to invest in expensive research, since they must be assured they can receive the economic benefits of that research. In food and agriculture, only the most highly capitalized firms, which include pharmaceutical firms, can afford such expensive research. Smaller firms without such access to capital – or even large firms like Cargill – exited the seed business in the late 1990s.

The same pattern of concentrated markets is occurring in the “protein sector” where the markets for meat and dairy have CR4s that range from 50 to 81 percent (Hendrickson and Heffernan 2002).¹ The largest protein firm in the world, Tyson Foods, is the largest beef and chicken processor with almost a third of U.S. slaughter in beef and broilers, and ranks second in pork processing in the United States. Smithfield is the largest pork producer in the United States, with over 700,000 sows in production, and the largest pork packer – a position secured by its

¹ We call the combined market share of the top four firms in any particular commodity the CR4 ratio (see Constance and Heffernan, 1994).

recent acquisition of Farmland Foods processing capacity.² Cargill's Excel meat processing company ranks second in beef processing and fourth in pork packing. ConAgra, until recently a large player in the protein sector, sold its pork and beef concerns to an investment firm that operates under the name Swift & Company, while retaining a 46 percent share in the new enterprise.³ In addition, ConAgra recently sold their poultry operations to Pilgrim's Pride, placing that firm second in the number of broilers processed in the U.S.⁴ These same firms show up as large processors across the globe, where Smithfield is the largest pork processor in Poland and second largest in France, with large production facilities on the ground in Brazil and Mexico. Cargill is a large meat processor in both Canada and Australia.

Major grain crops exemplify the same trend. In the US, four firms – Cargill, Cenex Harvest States, ADM and General Mills – control 60 percent of the terminal grain handling facilities,⁵ while Cargill and ADM (combined with Zen-Noh) export 81 percent of US Corn and 65 percent of US soybeans.⁶ In addition, 61 percent of the flour milling is controlled by four firms, including ADM, ConAgra and Cargill, and 80 percent of the soybeans are crushed by the top four, including ADM, Cargill and Bunge (Hendrickson and Heffernan 2002). Bunge became the largest oilseed processor in the world with its purchase of Cereol in late 2002, and it is the dominant firm, along with ADM and Cargill, in soybean processing in Brazil. In addition, commodity traders will verify that almost all the grain that moves between nations passes through Cargill, ADM or Bunge.

² Farmland, once the nation's largest farmer-owned cooperative, filed for bankruptcy in 2002 (Hollingsworth, 2002), an example of the difficulties of competing with well-organized and well-financed private firms.

³ *Feedstuffs* 9/23/02.

⁴ *Feedstuffs*, 6/16/03.

⁵ *Grain and Milling Annual*, 2002. Cargill and Cenex-Harvest States are now involved in a joint grain marketing venture.

⁶ *farministrynews.com*, March 2001.

II.2. The formation of food chain clusters

Concentration in commodity markets has some historical tendencies – e.g., the dominance of a few packers in the 1920s gave rise to federal anti-trust legislation in agriculture. In addition to agricultural commodity markets losing their competitive nature, we are seeing the emergence of integrated food chain clusters that dominate food and agriculture from genes to the shelf. Heffernan *et al* (1999) diagramed three of these emerging clusters. While careful to note the dynamic nature of the food and agriculture system, and the potential changes that could arise, the authors documented an emerging new structure in food and agriculture. The basic conclusion of this report, and another one produced by Hendrickson, Heffernan, Howard, and Heffernan (2001), was that economic power in food and agriculture – and thus the power to make decisions about where and what food is produced, who grows it, and where it is marketed – was moving toward a few global firms embedded in a web of relationships in food production, from genetics to grocery retailing.

The clusters identified in 1999 were Cargill/Monsanto, ConAgra and Novartis/ADM (see Figures 1-3). The clusters started with access to genetic material – the seed firms – and worked down through grain and animal procurement, processing and food manufacturing. Although the clusters have changed, integrated clusters dominate agriculture and food production around the world.⁷ For instance, ConAgra has exited much of the middle by selling its meat and poultry lines and agricultural input concerns like United AgriProducts. Similarly, the Novartis/ADM cluster has undergone significant changes with ADM buying Farmland's grain operations, Novartis combining seed and chemical operations with AstraZeneca, and IBP ceasing to exist as a stand-alone company. Cargill has developed joint ventures with Dow and Hormel while

⁷ For an industry perspective, Schuff (1999) and Drabenstott (1999).

restructuring itself to become more than a commodity trader. Other firms, like Bunge, Tyson and Smithfield, are positioned to form other food chain clusters.

II.3. Changes in food retailing

While the clusters illustrated in Figures 1-3 stop with food manufacturing, food retailing has seen the biggest changes since the mid 1990s. These changes are having major impacts on what happens to the agricultural marketplace, and by extension what happens to farms and the diversity of the plants and animals that make up those farms. Currently, about five to six retailing firms are emerging on the global level, with Wal-Mart a key contender. Every continent has seen the penetration of the giants of food retailing, even into the poorest of the poor regions (Weatherspoon and Reardon, 2003; Reardon and Berdegúé, 2002). As these firms gain market power, they will be able to dictate not only price but also production practices back to the processors and producer-farmers through the supply chain. Moreover, these firms will be able to specify the genetics of the grains, fruits, vegetables and meats that they sell given their relationship with the final consumer (Marsden, 2003).

The significance of the changes in food retailing for production is in the restructuring of supply and distribution networks, and in the development of standards enforced by retailers (Reardon and Berdegúé, 2002). While food manufacturers have sometimes embraced consolidation because it decreases transaction costs, it also distorts power in the chain and puts the food retailers “in a position to demand so much more from food processors” (Stanton 1999: 36). Burch and Goss (1999:347) observe that the increasing consolidation of the retail sector “has had significant effects right through to the farm sector, transforming the demands placed on Australian growers and processors...,” a transformation that “has shifted the degree to which

producers can respond to changes within global relations of production.” No matter how big Tyson or ConAgra, they must go through a food retailer to ultimately reach consumers. The more consumers that are funneled through one entity (such as Wal-Mart), the more powerful that entity becomes in being able to set its own prices to pay suppliers.

III. Implications for Farmer Behavior and Farm level decision making

Although industrialization has resulted in substantial increases in agricultural productivity over the last century, its effect has created downward pressures on farm prices even as input costs have increased consistent with inflationary norms. The downward pressure on prices resulting from increased productivity causes what Cochrane (1958) termed a “technological treadmill.” As Thompson (1998:108) clarified, “agricultural technology increased farm productivity, but this in turn lowers prices, forcing individual farmers to run faster just to stay in place.” The industrialization of agriculture and the resulting technological treadmill on which farmers are being forced to run is a result of technological change and social preferences for low cost, high quality food. According to Burkhardt (1991:321):

“The historical analogies are clear: nearly every efficiency-increasing innovation in technology over the past 100 years that has been introduced into agriculture and widely adopted by agricultural producers has contributed to the industrialization and concentration of agricultural production. The predominant judgment on the part of the agricultural establishment (including farmers), as well as the implicit judgment on the part of consumers, has been that increased productivity, yields, and cheap and available food are the prime concern. Economics appears to dictate that this will be best (or only) achieved by high-tech, large-scale agricultural operations, so that technologies favoring this structure have been and probably will continue to be introduced into agriculture.”

There is no evidence that these economic pressures are expected to subside. The implication is that farmers will face greater economic pressures over time to decrease the costs of production by adopting new technologies and increasing farm size or to increase their revenues

no matter how this is done. In and of itself, this will have important consequences on farmers, farm-level decision-making and the behavior of farmers.

However, in addition to economic pressures, there is another important implication of industrialization, reflecting the issues of who makes the decisions about what is produced and consumed and whether the question of who makes these decisions matters at all. The discussion above suggests that a relatively small number of firms, which continues to decrease, make a growing number of the major decisions in the food system – in the United States and around the world. Moreover, decisions about who produces our food, what food is produced, how it is produced and who gets to eat that food have been steadily moving from the more public realm of households and governments to the more private realm of corporation boardrooms. As the structure of the marketplace has changed for farmers, the decisions they *can* make about what plants and animals to use in their farming operation are being severely constrained. This effect is destined to have a huge impact on agricultural activity.

For example, consider the case of the U.S. broiler industry. Poultry production is almost entirely coordinated with production (Hinrichs and Welsh 2003), which means that the vast majority of broilers produced in the United States move through one of the 40 integrating firms in operation, including the three largest, Tyson, Pilgrim's Pride, and Gold Kist (a cooperative). Importantly, production standards for broilers – from the type of building constructed to feed for the birds to treatment of illness – are specified by the integrating firm. The integrating firm determines when chicks will arrive in the growers' barns, when they will be picked up, and how much the farmer will receive for his or her efforts. The feed ration is devised by the firm, and delivered to the farm on a regular basis. If chicks are sick, the grower needs to call the field representative of the integrating firm to determine the problem and devise a solution. In fact, if a

grower suspects that the firm has given him sick chickens or bad feed, he cannot confirm his suspicions by testing the feed, which is owned by the integrating firm.

While the broiler industry is the most integrated in the United States, hogs have nearly mirrored the structure of poultry in recent years, with the majority of hogs now produced under production or marketing contracts (Welsh, Hubbell, and Carpentier, 2003). In addition, cattle are mostly finished and marketed through marketing contracts, and more and more crops are grown with bundled seed, fertilizer, chemical and marketing arrangements. Even without these disempowering contracts, Levins (2001) argues that concentrated markets mean farmers have little choice where to sell and how to produce what they sell.

What are some of the implication of farmers having “little choice?”

III.1. Loss of knowledge, skills

One implication of constrained choice is the loss of agricultural production knowledge. As an illustration, when farmers specialize in the production of one crop or in producing one sort of animal, knowledge is lost as farmers rely on standardized inputs to produce their commodity (Kloppenburg, 1991). Indeed, one could argue that knowledge is lost all along the way from field to mouth – in tastes, in cooking skills, in managing biodiversity. In producing food in such a way, agriculture has been subjected to the same discipline and control as manufacturing and industry despite arguments that agriculture has natural or biological limits that does not lend food and fiber production to the manufacturing paradigm (Lockie, 2002).

Within this context, a recent study of Missouri farmers by James (2003) found that farmers often bemoan the fact that farms have become less diversified because of economic pressures to shed hog operations and scale back cattle businesses in order to concentrate

principally on corn, soybeans and wheat. Many crop farmers feel they should specialize in crops not only because they are losing money in livestock but also because low profit margins in grain require them to devote more acreage to crops in order to maintain income levels. Such specialization is expected as market pressures increase, but the impact of the change is felt much deeper for the farmer. Some enjoyed the physical labor associated with working with animals in contrast to the monotony of driving a tractor up and down acres and acres of farmland. Others felt they have a moral imperative to have livestock on a farm, particularly if they were raised on farms that used animal labor, but the moral imperative could not be reconciled with the fact that it was financially difficult to sustain a livestock business. Specializing in crops rather than having diversified farms with crops and livestock also changes the way many farmers work and manage their finances. The cash flow from a hog business, for instance, could smooth farmer incomes throughout the year. Now, farmers must either borrow money throughout the year or take on second or third jobs during the “down time” in winter to generate additional family income.

III.2. Loss of genetic diversity

Changes in the structure of food and agriculture have also had important impacts on farm level ecological diversity. As the marketplace for farm products has consolidated, farms have grown larger and more specialized. For genetic diversity and ecological systems as a whole, this should be a grave concern. For instance, some authors argue that the US Midwest now represents a large ecological sacrifice area (Jackson and Jackson, 2001) with farms consisting of nothing but corn, beans, and confined animal feeding operations. Research carried out by students at Iowa State University showed that Iowa farms were much more diversified in the

early part of the last century. In 1935, seven different commodities were produced on at least 50 percent of Iowa farms; by 1997 this was reduced to two – corn and beans (see Table 1). A similar story can be told in Missouri where only 5 percent of farms were producing hogs & pigs in 1997, down from 43 percent in 1964, and only 4 percent of farms were dairying, down from 39 percent in 1964.⁸

Table 1: Farm specialization in Iowa from 1935 to 1997

US Census of Agriculture	1935	1954	1978	1997
<i>Commodities that were produced on at least 50% of more of Iowa Farms</i>	Cattle, Horses, Chickens, Corn, Hogs, Hay, Potatoes, Apples, Oats	Corn, Cattle, Oats, Chickens, Hogs, Hay	Corn, Soybeans, Cattle, Hay, Hogs	Corn, Soybeans
<i>Commodities that were produced on between 15% and 50% of Iowa Farms</i>	Cherries, Grapes, Plums, Sheep, Peaches, Pears	Horses, Soybeans, Potatoes and Sheep	Oats	Hay, Cattle, Hogs
<i>Commodities that were produced on between 1% and 15% of Iowa Farms</i>	Mules, Ducks, Wheat, Geese, Sorghum, Barley, Red Clover, Strawberries, Soybeans, Raspberries, Bees, Timothy, Turkey, Rye, Popcorn, Sweet Corn, Sweet Clover, Goats	Ducks, Apples, Cherries, Peaches, Goats, Grapes, Pears, Plums, Wheat, Red Clover, Geese, Popcorn, Timothy, Sweet Potatoes, Sweet Corn, Turkeys	Horses, Chickens, Sheep, Wheat, Goats, Ducks	Oats, Horses, Sheep, Chickens, Goats

Source: Carolan, Michael. 2001. Iowa State University, Department of Sociology.

III.3. Increased capitalization requirements and farm debt loads

As scale, specialization and standardization have taken hold in food production, the use of inputs and their costs have soared. Manufacturing requires large sums of capital, something the cooperative movement recognized long ago. Those who can obtain capital, and those who have access to capital at a lower cost, are in a more advantageous position relative to those who

⁸ Calculated from US Department of Agriculture, 1977 Census of Agriculture, Missouri State and County Data, vol. 1, Geographic Area Series, Part 25, Washington, DC: U.S. Department of Agriculture, Table 1, pages 10-11, available at http://www.nass.usda.gov/census/census97/volume1/mo-25/mo1_01.pdf.

cannot. Cargill, for instance, expects to double their net worth every 5-7 years, which reflects an annual return on investment of approximately 12 percent. Moreover, these kinds of firms seeking capital have better access to other investment channels, giving them a significant advantage over community-based farmers or other businesses.

For farmers making decisions at the farm level, access to capital at competitive rates is key, particularly as economies of scale and incentives to specialize require farmers to increase the size of their operations in order to remain competitive. Such economic pressures, coupled with increasing land values, mean that farmers will have to increase the amount of debt they carry.⁹ However, capitalization and the resulting debt can constrain the decisions that farmers make both directly and indirectly. First, as farm debt increases, some farmer decision might be dictated by lender requirements. Second, increasing debt could also affect the types of farming decisions a farmer can make. For instance, a farmer from Nebraska made the following comments about raising Round-up Ready soybeans:¹⁰

‘If I have to buy this land, and be more financially leveraged, I don’t have the luxury of not planting RR soybeans. While I may make more money on non-RR beans, I have more risk with them. With RR beans, I know how much it’s going to cost – Monsanto will reimburse if you have to spray more than twice – and about how much I’m going to make.... Basically, I don’t have a choice.’

‘If I have the much land, and have to get the crop in, I’m going to have to start working in the fall – I think I’m going to even apply fertilizer then.... Hell, if [others] don’t care about water quality, why should I?’

⁹ For instance, according to the US Department of Agriculture’s Economic Research Service, “Farm business debt is expected to rise about 2.5 percent in 2004, compared with 3.6 percent in 2003 and 4.1 percent in 2002. Total farm business debt is expected to approach \$206 billion by the end of 2004” (online Briefing Room: Farm Income and Costs: Assets, Debts, and Wealth, at <http://www.ers.usda.gov/Briefing/FarmIncome/wealth.htm>, accessed June 7, 2004.). The trend of increasing farm business debt, coupled with the declining trend in the number of U.S. farms, indicates that the per farm debt is increasing substantially.

¹⁰ Personal conversation with Bob Hendrickson, January 12, 2004.

Thus, debt is a key constraining factor for most farmers. Many Missouri farmers, for instance, have indicated that they would like to try alternatives in agriculture, but they don't feel they can make a living with these alternatives.¹¹ Closer probing indicates that often it is servicing the debt accrued in commodity production that constrains their ability to live on the profits from smaller scale, less intensive agricultural operations.

For instance, in contract livestock production, debt constrains producers who have borrowed heavily to finance construction of highly specified production facilities that cannot even be used for producing for other integrating firms let alone other livestock. Farmers have to rely on the contract – normally three months to one year – that is offered to them by the initial integrator.¹² Bucking the integrating firm's production standards is not an option for farmers stuck with 10-year loans on buildings that are a quarter of a million dollar investment. In crop production, high prices for cash rent across the Midwest, combined with increasing input prices for patented seeds, chemicals, fertilizers and equipment, mean that farmers have to know they can market their crops in order to pay off the operating loans. Thus, few farmers try crops like oats, sunflowers, sorghum or other things that may work into a useful rotation but lack accessible markets. Most farmers must rent at least a portion of their crop land which also makes it difficult for them to try alternative crops or crop rotations without landlord approval (Levins 1999).

III.4. Erosion of farmer ethics

The concentrated and industrialized nature of agricultural markets has not only increased the competitive pressures farmers face, but also resulted in farmers having fewer production and

¹¹ Personal conversations with members of Missouri Farmers Union and Organization for Competitive Markets, April 29, April 30 and May 1, 2000.

¹² For a good description of the economics of poultry contract production, see Taylor (2002).

marketing options for their crops and livestock. Loss of competitive markets for their outputs has made participation in emerging food chain clusters more attractive for farmers even given tighter controls on production standards. Indeed, increasing consolidation at the retail level means that more production standards are being dictated to the farm level by food manufactures and agricultural processors trying to please their clients. Moreover, increasingly concentrated input markets means it is much more difficult for farmers to obtain non-genetically modified seeds or heritage breeds. For instance, when 80 percent of the soybean crop in a state is planted to Round-up ready soybeans,¹³ obtaining conventional soybean seed is difficult, if not impossible, and the same holds true with “heritage” breeds of poultry or hogs that are no longer used in integrated production chains.

We argue that constraints on the choices farmers can make might also result in an erosion of farmer ethics. Scholars have recognized the importance of understanding the ethical behavior of farmers. For example, Thompson (1998, p. 95) said the

current generation of adults may believe that rural residents, particularly farmers, are more likely to exhibit ethically praiseworthy conduct and more likely to base action and decision on ethical principles. In one manifestation, agrarian ideology has maintained the notion that farm families are more likely to be guided by principles of ethics than are others, and that because farming is morally significant, agriculture should be given special consideration in matters of public policy.

Nevertheless, “those who ... farm increasingly tend to see their operations as a business and resent the suggestion that they should be held up as moral exemplars” (Thompson, 1998, pp. 183-184).

Importantly, there is evidence that farmer ethics is eroding. For example, *Farm Futures* magazine surveyed its readers in 1990 to evaluate the ethical perceptions of farmers. The survey “contained information on perceptions of the state of farm ethics, reasons for that state, multiple

¹³ See Jody Powell, “Seeds of controversy,” *Minneapolis Star Tribune*, 5/18/04.

ethical choice and problem situations, values and opinions, and personal information including church attendance, farm type, sales and profit levels, and current degree of satisfaction with farming” (Rappaport and Himschoot, 1994). The results, reported by Knorr (1991) and Rappaport and Himschoot (1994), show that farmers believe the ethics of agricultural producers have declined during the previous 10 years and that “their own ethics have also deteriorated” (Knorr, 1991, p. 11). The study also found that “respondents believe the ethical decisions they face are more difficult than those faced by an earlier generation” (Knorr, 1991, p. 11).

Although there might be many explanations for the erosion of farmer ethics, we consider it to be strongly attributed to the industrialization and concentration of agriculture production and the resulting increase in decision-making constraints and economic pressures such changes have produced. If industrialization is resulting in an erosion of farmer ethics, then that will have significant implications not only on the general public’s perceptions of farmers but also on the way in which the “business” of agricultural occurs.

We present insights from social psychology and economics to show how and why constraints placed on the choices of farmers could result in an erosion of farmer ethics.

III.4a. Self-identity and moral behavior

According to social psychologists, group and self identity are prime movers for behavior, such as moral behavior. Furthermore, changes in one’s sense of identity will have an effect on the behavior of individuals. For instance, Monroe (2001) argues that identity formation and the innate need of individuals for consistency and self-esteem help explain why some people in Europe aided Jews during World War II and why others did not. According to Monroe,

identity [refers] to the sense, developed early in childhood, of oneself as both an agent and as a kind of object that is seen, thought about, and liked or disliked by others.

Identity is complex and multivariate, and it is critical for an individual – and the world – to have a sense over time that the individual who is here today is also the individual who will be there tomorrow. Longitudinal congruence provides a key source of an individual's psychic comfort and the maintenance of identity Consistency thus plays an important role in identity maintenance and becomes crucial to identity. (500)

In the case of the moral issue of helping Jews during World War II, Monroe's (2001:496) research illustrated "the extent to which the decision to rescue – or not to rescue – Jews was described as a reflection of identity, of the kind of person one was."

Thus, one's sense of identity will likely have an affect on the moral behavior of individuals. This is important if constraints in the decision-making abilities of farmers created by industrialization result in changes in farmer self-perceptions of who they are – independent farmers working the land with freedom to choose their own paths or cogs in an agro-industrial machine. If a farmer's sense of self-identity changes, the implication is that their responses to ethical dilemmas they inevitably face might also change, for the worse.

III.4b. Economics of constrained choice on ethical behavior

A fundamental tenet of economics is that behavior is affected by two factors – preferences and constraints. Preferences reflect what decision-making outcomes an economic agent desires, while constraints reflect what decision options are available. Both are necessary in order to understand the choices an economic agent makes. Moreover, factors that restrict the choices available to decision makers will alter their behavior and influence the aggregate welfare of society by encouraging people to make choices they otherwise would not have made. Thus, a change in constraints, such as the number and types of options available to farmers, will likely affect their behavior *somehow*. The question we are concerned with is whether such changes in behavior have ethical implications.

We present a simple economic model to illustrate how constraints in the options or choice set available to farmers could result in an increase in the unethical conduct of farmers. Suppose a farmer has a set of n options, defined as $\{S_1, S_2, \dots, S_n\}$, where S_1, S_2, \dots, S_n represent available ethical options, and suppose that the farmer could earn an amount m_{S_1} (measured in money) by choosing S_1 , amount m_{S_2} by choosing S_2 , and so forth, to amount m_{S_n} by choosing S_n , where $m_{S_1} > m_{S_2} > \dots > m_{S_n}$, so that S_1 is preferred to S_2 which is preferred to S_3 and so forth. Suppose further that the farmer can also engage in a variety of unethical actions, which we label D , in order to increase his income. Consider now panel (a) in Figure 4.¹⁴ On the x-axis we measure the amount of money the farmer could generate (from ethical and/or unethical actions). On the y-axis we represent the farmer's personal ethical standards, proclivities, and behavior, measured by e , where a high e indicates behavior that is "very ethical" while a smaller e represents a lower degree of ethical conduct. We assume that e_M represents behavior that is "fully" ethical (i.e., so the y-axis reaches a maximum at e_M). For example, someone who never tells a lie would have a value of e equal to e_M , if honesty is the defined measure of personal ethics. For simplicity we also assume that ethical judgments can be represented along a single graphical scale (e.g., ranging from "low" to "high"). This could be justified as follows: According to the empirical evidence, there has been an "erosion" of farmer ethics. This suggests a decrease from some "higher" level of personal ethical proclivities or behaviors to a "lower" level, consistent with a linear graphical representation. To consider another example, deception is widely considered to be an ethical problem. Nevertheless, there are different types of lies and different motivations for lying that range from altruistic to individualistic to exploitive (Linskold and Water, 1983). Suppose D entails choices involving deception, which is measured graphically along the vertical

¹⁴ This figure is an adaptation of Brickley, Smith and Zimmerman (2001, Figures 2.7 and 2.8).

axis of Figure 4 by e , which represents the degree of honesty chosen by the agent in a particular context, where honesty is understood to be the inverse of deception or the telling of lies. A low e might represent the telling of exploitive lies, with increasing e 's representing the telling of individualistic lies, then altruistic lies, and finally no lies (in which case $e=e_M$), respectively.

The straight line in Figure 4 is a “constraint” in that it represents how much additional money the farmer can earn by behaving unethically. In essence, this line defines the relative price of ethics. The flatter the constraint, the greater is the relative price of behaving ethically, or, conversely, the greater will be the (monetary) gains from engaging in unethical behavior. For instance, if e_M represents behavior that is fully ethical, and m_{S1} is the amount of money earned from the most preferred ethical option (S_1), then if the farmer want to increase money from m_{S1} to m_1 , that will require a decrease in his ethical standards represented by movement from e_M to e_1 .

The curved line represents the combination of ethics and money chosen by the farmer that produces constant utility (i.e., it is an isoutility or indifference curve). As such, it represents his “preferences” between ethics and money. Point A represents the farmer’s choice of personal ethics and money earned that maximizes his utility. We can represent an increase in utility by shifting the curved isoutility line outward; conversely, a movement toward the origin of the isoutility curve will indicate a lower level of utility.

As discussed above, an important implication of industrialization is a constraint in the decision options available to farmers. If the option that is restricted is the most preferred “ethical” option, then we can show that the effect of this is a greater incentive for the farmer to

engage in unethical conduct.¹⁵ We show this as follows: Suppose option S_1 is removed as a choice option so that the farmer's ethical decision set is constrained to be $\{S_2 \text{ and } S_3\}$. This has the effect of shifting to the left the “constraint” line reflecting the relative price of ethics, as shown in panel (b) of Figure 4, because S_2 is now the “most preferred” ethical option, with income earned from this option equal to m_{S_2} . This will result in an erosion in ethics as the farmer adjusts his personal ethical standards downward from e_1 to e_2 , other things being equal, by moving from point A to point B. Interestingly, the farmer is on a lower isoutility curve, indicating that he is relatively worse off because of the constrained choice. Simply, other things being equal, the farmer would “prefer” (i.e., be better off) not having the constraint in choices and not lowering his personal ethical standards. The farmer's erosion of ethics, however, is a “rational” response to the imposition of a restriction in his ability to select option S_1 .

IV. Conclusions

We have shown that as markets become increasingly concentrated, the decisions that farmers can make about what to produce and where to sell are becoming constrained. For instance, globally emerging food chains, dominated by transnational food retailers, determine many farm-level decisions, in that they shape the markets for inputs, including seeds and breeds, as well as outputs, including livestock and grains. We have also shown that constrained decision choices can lead to an erosion in ethical behavior of farmers. Constrained choices for farmers

¹⁵ Interestingly, experimental evidence from psychology suggests that a reduction in the number of options available to a decision-maker will increase the likelihood that less preferred options will be selected in ways that could have implications for ethical behavior. For instance, Glazer, Kahn, and Moore (1991) show that when three options are available to decision makers – S_1 , S_2 , and D – where S_1 is preferred to S_2 , and S_1 and S_2 are similar but D is substantially different from the other two options, removing S_1 from the choice set not only increases the probability that S_2 is chosen but also increases the probability that D is selected. Suppose S_1 and S_2 are ethically appropriate actions, while D is an available but ethically inappropriate action. The experimental evidence suggests that constraining farmers to a choice between S_2 and D , for instance, *could* increase the likelihood that the ethically inappropriate action, D , is selected.

will likely mean more and more unethical decisions regarding land, seeds, and labor.

Agriculture is emerging as a place where ethically compromised positions could become natural for farmers, and perhaps mirror other businesses that have had ethical failures in recent years.

With food as a basic builder of life, and with the potential for large scale environmental impacts from farming, it is perhaps time to turn attention to the ethical attitudes, proclivities, and behaviors of farmers.

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Cargill/Monsanto

Joint Ventures and Strategic Alliances

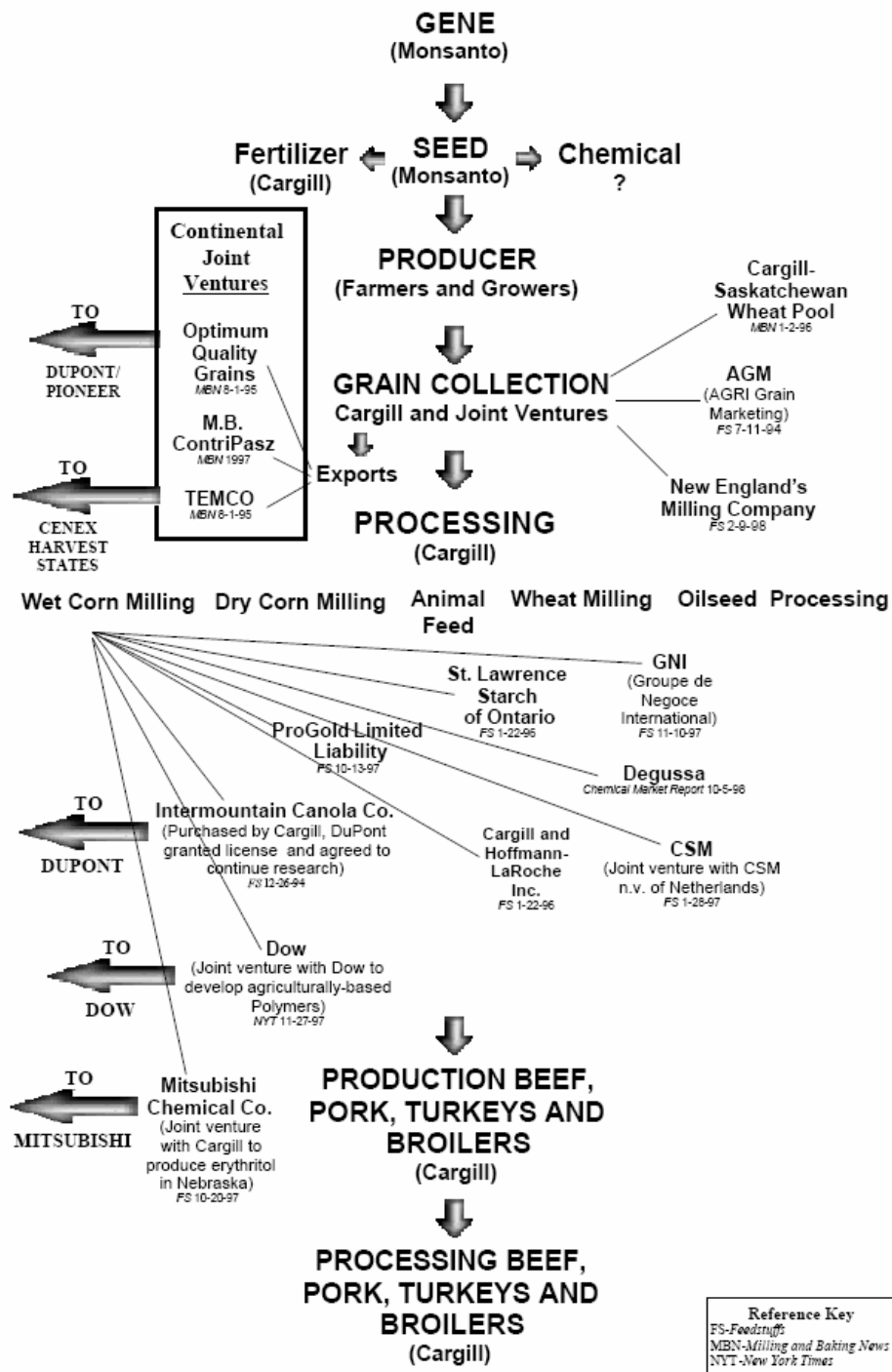


Figure 1. Cargill/Monsanto food-chain cluster, from Heffernan, Hendrickson, and Gronski (1999).

ConAgra Joint Ventures and Strategic Alliances

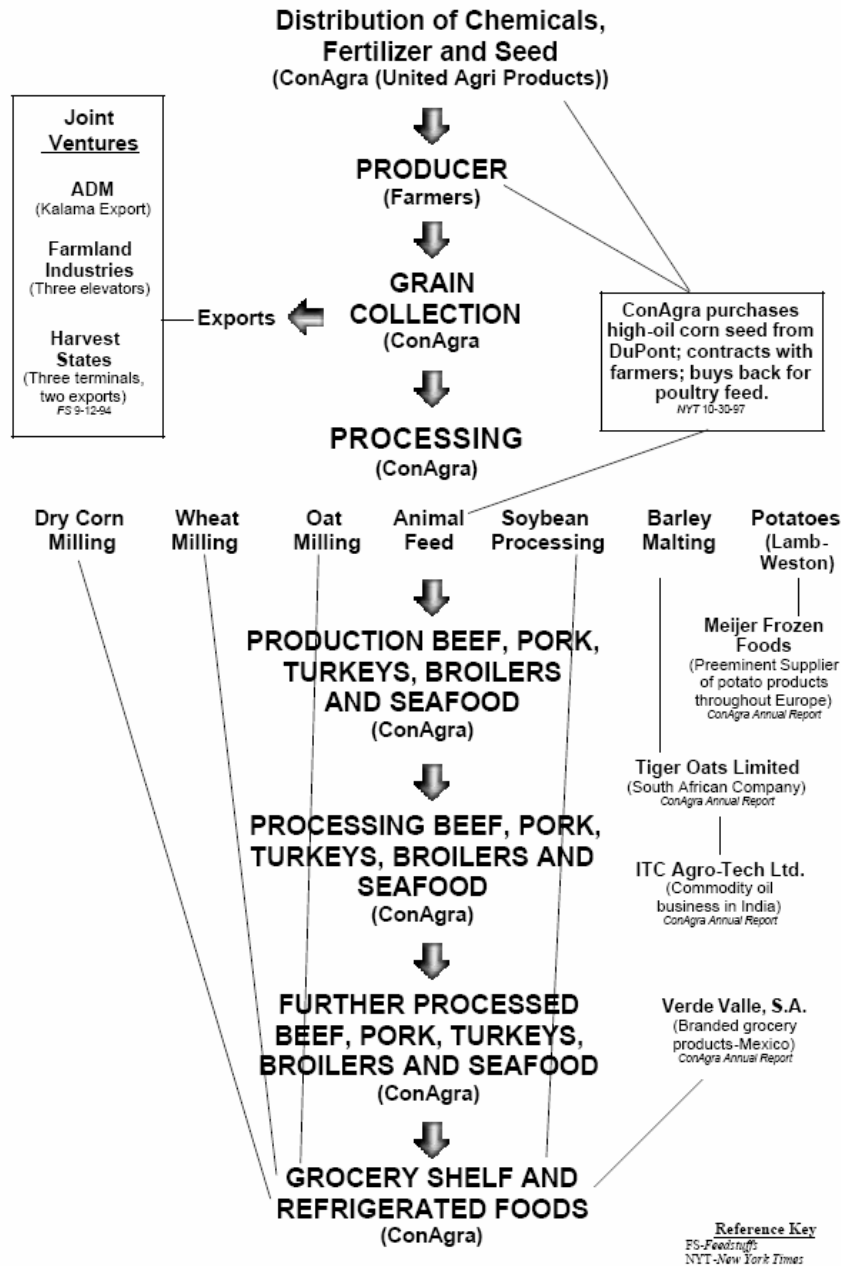


Figure 2. ConAgra food chain-cluster, from Heffernan, Hendrickson, and Gronski (1999).

Novartis/Archer Daniels Midland (ADM) Joint Ventures and Strategic Alliances

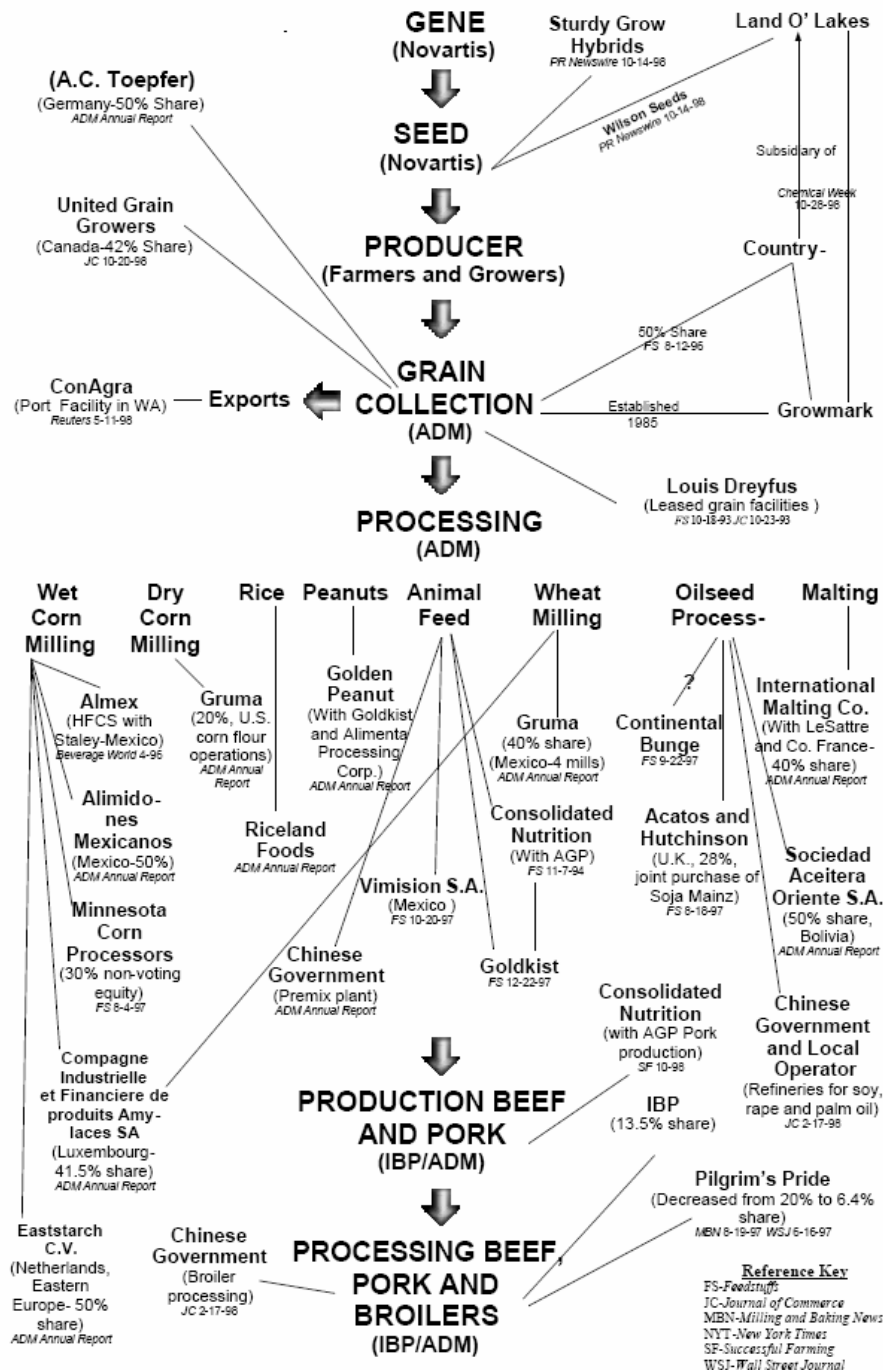
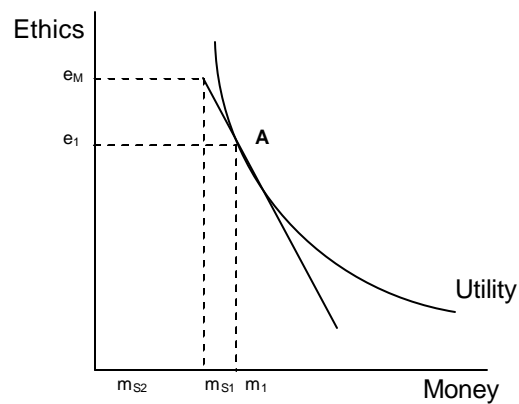
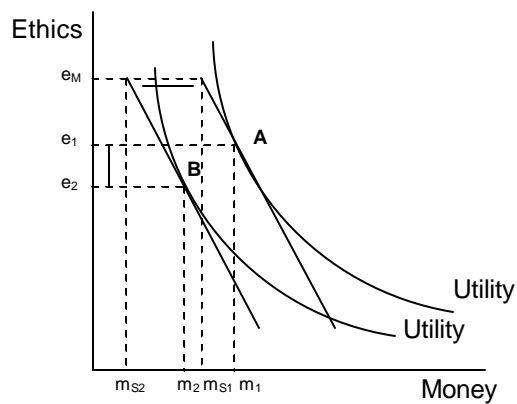


Figure 3. Novartis/ADM food chain-cluster, from Heffernan, Hendrickson, and Gronski (1999).



(a)



(b)

Figure 4. Example of the effect of constrained choice on the ethics of a farmer. The figure shows how the removal of a choice option (S_1) induces the decision-maker to lower his ethical standards. Adapted from Brickley, Smith and Zimmerman (2001, Figures 2.7 and 2.8).