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**The Cost of Compassion: The Impact of Welfare Reforms on the Profits of Animal Factories and the Retail Price of Animal Products**

Author: Norm Phelps\*

Title: Independent author and animal rights activist

Affiliation: Society for Ethical and Religious Vegetarians

Location: Funksown, Maryland, USA

E-mail: normphelps@animalsandethics.org

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**THE COST OF COMPASSION: THE IMPACT OF WELFARE REFORMS ON THE PROFITS OF ANIMAL FACTORIES AND THE RETAIL PRICE OF ANIMAL PRODUCTS**

**Abstract**

This article considers the impact of welfare reforms on the cost of raising animals for their flesh, eggs, or milk, and on the retail price of animal products. It surveys the academic and industry literature on the subject, with emphasis on the economic impact of three proposed reforms: eliminating gestation crates for pregnant pigs, eliminating barren battery cages for hens who lay eggs, and eliminating electrical water bath stunning for chickens raised for their flesh. It

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\*Norm Phelps is an American animal rights activist and writer. He is a founding member of the Society for Ethical and Religious Vegetarians and the author of several books on animal rights and religion, including *Changing the Game: Why the Battle for Animal Rights is so Hard, and How We Can Win It* (2013), *The Longest Struggle: Animal Advocacy from Pythagoras to PETA* (2007), *The Great Compassion: Buddhism and Animal Rights* (2004), and *The Dominion of Love: Animal Rights According to the Bible* (2002).

concludes: a) that the plentiful supply of cheap animal products is dependent on the productivity enhancements brought about by industrial techniques; b) that most welfare reforms reduce productivity and thereby increase the cost of raising animals; this in turn increases the retail price of animal products, although in some cases, not beyond consumers' willingness to pay; c) the size of the cost/price increase depends on the nature of the reform and the number of animals affected; and d) over time, welfare reforms can drive up the retail price of animal products to the point that demand is significantly reduced, thereby reducing the number of animals who are enslaved and slaughtered for their flesh, eggs or milk. Used in conjunction with other strategies, including vegan and abolitionist advocacy, welfare reforms can contribute to the shrinking and eventual abolition of animal agriculture.

## Introduction

The debate within the animal rights community over the strategy of campaigning for reforms that reduce the physical and emotional suffering of animals began with the work of Gary Francione in 1996. In *Rain without Thunder* (and in subsequent books, articles, and posts on his popular blog, *The Abolitionist Approach*), the Rutgers law professor and animal advocate has contended that welfare reforms undermine the animal liberation message by failing to attack the legal status of animals as property and encouraging the public to believe that they can consume products from “humanely raised” animals with a clear conscience.

More recently, Professor Francione has emphasized a third argument in his case against welfare reforms:

For the most part producers of animal products derive a palpable economic benefit from making welfare reforms, completely apart from the separate benefit that comes from being able to assure members of the public that the animal products they are consuming have been produced in a “humane” fashion. (Francione and Garner, 2010, p. 45)

Since the whole point of modern intensive confinement agriculture is to maximize profits, this is an intriguing argument. How does giving animals more space and better care—arrangements that intuitively would seem likely to increase costs—provide producers with “a palpable economic benefit?” Professor Francione asserts that “animal agriculture is not an efficient industry,” going on to explain that when factory farming techniques were being created

“there was no thought given to the fact that animals, unlike other production inputs, are sentient, and the stress caused by intensive confinement would cause damage to the animal property (Francione and Garner, 2010, p. 45).

Professor Francione’s first two arguments have been widely critiqued within the animal rights movement (see, for example, Friedrich, 2011; Phelps, 2007 and 2013, pp. 103-190; Shapiro, 2012). His third argument is sometimes asserted by opponents of welfare reforms but is usually left unsupported, as though its validity were self-evident. Supporters of reforms, on the other hand, have typically ignored Professor Francione’s assertion, as though it did not merit rebuttal. The economic impact of welfare reforms for farmed animals is, nonetheless, susceptible to quantitative analysis and has in recent years been the subject of considerable attention by agricultural economists. Therefore, it will be worthwhile to review the literature on the economic effects of welfare reforms and consider whether they do, in fact, strengthen the animal agriculture industry by reducing the unit cost of production.

### **Sophisticated Industry**

Animal agriculture is among America’s largest industries, generating annual revenues of \$180.1 billion a year, not counting revenues from field crops fed to animals (Economic Research Service, 2013). According to calculations made on the basis of U.S. Department of Agriculture statistics by Farm Forward—a non-profit group that advocates for “sustainable” and “humane” animal agriculture—99% of the meat, eggs and dairy consumed in the United States comes from large-scale intensive confinement facilities, known in the industry as Concentrated Animal Feeding Operations (CAFOs) and to everyone else as “factory farms” (Farm Forward). Other estimates by persons with extensive knowledge of the American meat, egg, and dairy industries put the number at closer to 95% (See, for example, Keyser, 2013). But whatever the precise figure, no knowledgeable person disputes that substantially all of the meat, eggs and dairy sold in supermarkets and restaurants originates on factory farms.

This vast industrial complex is supported by an extensive cadre of academic researchers. While some are employed directly by the giant corporations that dominate America’s food production, most serve on the faculties of land grant universities, institutions that

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actively support the food industry in general and agriculture in particular.<sup>1</sup> These schools have large and well-funded departments of agricultural economics whose work is supported by an agency of the U. S. Department of Agriculture, the Economic Research Service (ERS).

For half a century, the “damage to the animal property” caused by industrial agriculture has been a topic of study at departments of animal science and agricultural economics in land-grant universities and at the U.S. Department of Agriculture (as well as at institutions abroad, especially in the United Kingdom). And as I will show in the following pages, the bottom line for producers remains what it has always been: industrial agriculture provides dramatic increases in productivity made possible by economies of scale, space, time, labor and food that more than offset the costs occasioned by the damage that intensive confinement inflicts on the animals. With certain minor exceptions, which I will discuss in a moment, welfare reforms raise the cost of producing meat, eggs and dairy—they do not lower it.

### **Productivity: the Factory Farm’s Competitive Edge**

The adoption of Industrial farming practices during the second half of the 20<sup>th</sup> century was responsible for a quantum leap in the productivity of animal agriculture. Factory farms produce more animals with more edible flesh per animal (or who produce more eggs or milk per animal), in less time, on less land, using less labor and less food than is possible on old-style free-range farms.

Two of the industry’s leading researchers into the economic impact of welfare reforms are F. Bailey Norwood, Associate Professor of Agricultural Economics at Oklahoma State University, and Jayson L. Lusk, Professor and holder of the Willard Sparks Endowed Chair in the Department of Agricultural Economics at Oklahoma State. Norwood and Lusk cite three striking examples of the increases in productivity brought about by industrial agricultural practices:

In 1929 it took 85 hours to produce 1000 pounds of broilers (chickens raised for meat). Today it takes only one hour. Chicken producers are 85 times more efficient than they were in 1929. Needless to say, this has made chicken much cheaper. Eating chicken used to be a rare treat, reserved for special occasions like Sunday dinners. Now it is the most

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widely consumed meat in the US. On average, each person in the US consumed about 28 pounds of chicken in 1960, compared to 85 pounds today. And... the price of chicken has fallen 110 percent (adjusting for inflation). Similar efficiency gains have occurred in all livestock sectors. Dairy farms today only need 21 percent as many animals, 23 percent as much feed, 35 percent as much water, and 10 percent as much land as dairy farms did in 1944 to produce the same amount of milk. (Norwood and Lusk, 2011, pp. 39-40)

And finally:

In the early 1930s, the most productive egg farms only produced about 153 eggs per hen per year. Today farmers produce more than 250 eggs per hen per year. That is a remarkable achievement, the benefits of which are passed almost entirely to consumers in the form of lower prices. The industrialization of egg production began in the 1940s and progressed steadily over time... Prices in 1943 were 6.5 times higher [in constant dollars, NP] than they are today. (Norwood and Lusk, 2011, p. 115)

The sophisticated equipment needed for a factory farm—including computer-controlled feeding, lighting, climate, and milking systems—is more expensive, but it dramatically reduces the need for human labor. As food production, including animal products, has skyrocketed, the agricultural workforce has plummeted. According the U.S. Department of Labor, Bureau of Labor Statistics, between 1910 and 2000 the number of farmers and farm workers fell from 12,809,000 to 1,598,000, a decline of 87 percent (Wyatt and Hecker, 2006, p. 55). Some of this plunge was due to the introduction of tractors and other mechanized farm equipment, which began in the 1920s, but most resulted from the industrial transformation of agriculture that began after World War II.<sup>2</sup>

It is these previously unimaginable increases in productivity—that is to say, in efficiency—that have sharply lowered the cost of animal products over the past 60 years. Most animal welfare reforms reduce this efficiency and increase the unit cost of production. To see how this works, let's consider three reforms that are widely campaigned for today: the abolition of gestation crates for pregnant pigs, the abolition of battery cages for laying hens, and the elimination of electrical bath stunning for broiler chickens.

## Gestation Crates

In industrial pig factories, “breeding sows”—the females who give birth to the pigs who are sent to slaughter—are forced to spend their adult lives in individual metal-frame stalls called “gestation crates.” These stalls are so tiny that the occupant is unable to move, but must constantly lie motionless on her side on a concrete floor. Lusk estimates that a national ban on gestation crates would lead to increased costs for producers of \$258 million a year and necessitate a 1.7% increase in the supermarket price of pork.

Lynn Seibert, also an agricultural economist at Oklahoma State and Norwood estimated that conversion from gestation crates to group housing for “breeding sows” will cost on average an additional \$10.09 per finished pig,<sup>3</sup> even as they acknowledge that more experience with group housing and more research, especially in the field of group housing design, is needed before the precise figure can be definitively established (Seibert and Norwood, 2011a).

According to Seibert and Norwood,

Increasing animal welfare for all hogs [they mean all “breeding sows,” NP] in the United States will increase retail pork prices by a maximum of 2% for a small welfare increase and 5% for a large welfare increase. The cost of banning gestation crates measured by this study is lower than the consumer willingness-to-pay from other studies.” (Seibert and Norwood, 2011b)

The distinction between “small” and “large” welfare increases is based on the amount of space female pigs are given and the degree of enrichment that is provided, “enrichment” being the industry term for amenities that the animals are given, such as nesting material for pregnant pigs, who like to build soft nests for their newborns.

Norwood and Lusk project that banning gestation crates will increase the retail price of pork by approximately six and a half cents per pound, which they estimate will reduce pork consumption by 1.2% (2011, p. 351), a loss that the industry can easily absorb. The mega pork producers, such as Smithfield Foods, who are planning a phase-out of gestation crates believe—based on research such as that cited above—that they can pass on the increased cost to consumers. This being the case, they hope that welfare reforms will prove to be a worthwhile investment in damage control, allowing them to avoid unfavorable publicity. The considerable

resistance that still exists elsewhere in the pork industry has to do primarily with the upfront capital investment cost, which will take several years to recoup, and a concern that acceding to the demands of animal advocates might encourage activists to make other—more expensive—demands. In any event, the recent sale of Smithfield Foods to Chinese meat processing giant Shuanghui International has cast a shadow of uncertainty over Smithfield's conversion to group housing.

In short, current projections are that ending the use of gestation crates will not lower the costs and increase the profits of pig farmers. It will raise their costs by 5% or less, but producers will be able to pass these costs along to consumers while consumption of pork stabilizes at nearly 99% of present levels.

### **Battery Cages**

The cost increases associated with eliminating gestation crates for sows have only a small impact on the retail price of pork for two reasons: First, the “breeding sows” who are kept in the crates represent only a small fraction of the pigs in a producer's herd. The pigs who are slaughtered for pork and who constitute the vast majority of the herd are kept in group housing known as confinement sheds (where they have a mere eight square feet per pig [Norwood and Lusk, 39]). Second, the cost of raising the pigs accounts for only 25% of the retail price of pork (Ikerd, 2001). The remaining costs come from slaughter, the post-slaughter butchering and dressing of the meat, storage, and distribution.

With “laying hens”—the female chickens who produce eggs—the situation is just the opposite. First, the “breeding stock” are kept in group housing, but the hens who actually lay the eggs that go to market—and who constitute the overwhelming majority of the flock—are kept for their entire adult lives in battery cages. This is Norwood and Lusk's description of a typical battery cage system: “Hen houses are large metal buildings containing from 100,000 to one million hens in cages stacked up to six rows high... [T]ypical cage systems provide 67 square inches per bird” (Norwood and Lusk, 2011, p. 116). Sixty-seven square inches per bird is a space 10 inches long by 6.7 inches wide—smaller than a sheet of typing paper—not enough room for the hens to spread their wings or groom themselves, much less walk around. And, of course,

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there are no perches for them to sleep on or nests in which to lay their eggs; and since the cages have wire floors, there is no opportunity to take dust baths or to peck in the dirt. Almost invariably, proposals for welfare reforms for chickens include enlarging and enriching battery cages or eliminating them entirely in favor of some form of group housing.

Second, in regard to shell eggs (the eggs that are sold in supermarkets and restaurants), the eggs that come out of the hens are finished products that require no processing beyond washing, grading and packaging. This means that a large proportion of the retail price of shell eggs represents the cost of raising and maintaining the laying hens and collecting the eggs. Thus, eliminating battery cages has a considerably greater impact on the retail price of eggs than eliminating gestation crates has on the retail price of pork.

Norwood and Lusk estimate that a nationwide ban on battery cages for laying hens would cost producers \$187 million a year and increase the cost of producing eggs by \$0.35 a dozen, leading to a 21% increase in the supermarket price of eggs and a 4.24% decrease in consumption (Norwood and Lusk, 2011, pp. 350-351). This means that at any given time there would be a decrease of more than 14,000,000 hens from the current population of 340,000,000 (Norwood and Lusk, 2011, p. 232).

At present, however, there is no politically feasible path to a nationwide ban on battery cages (Shapiro, 2012). And there is no prospect that additional states will ban battery cages, either via the legislature or by ballot initiative (Phelps, 2013, pp. 146-147). This means that the only welfare reform that could become a reality in the near term—say, the next ten to fifteen years—is larger, enriched cages. Larger cages—the size most often proposed is 124 sq. in. per bird—and enriched cages, by which is usually meant cages that contain nests, perches, and gravel for scratching and pecking, are far from ideal. But they are a clear improvement over the present lot of laying hens.

Addressing United Egg Producers, a major trade association, in 2012, Hoy Carman, Professor Emeritus, Department of Agricultural and Resource Economics, University of California, Davis, estimated that conversion to a cage-free system would increase production costs by 34.8 percent; enlarged cages that allowed 116 square inches per hen would increase production costs by 12.48 percent and retail prices by 12 percent (Carman, 2012, pp. 2-3). Thus,

just as we might expect, enriched cage systems increase operating costs significantly, but also significantly less than cage-free systems.

This is confirmed by the experience of JS West, an agricultural, energy and retail conglomerate that has installed one of the largest enriched cage facilities in the United States, housing 151,000 laying hens. In 2011, JS West reported to an egg industry conference hosted by Iowa State University that operating costs at this facility were running 15% to 17% above costs in their conventional battery cage facilities, leading them to charge an additional 10 to 12 cents per dozen for enriched cage eggs. The ultimate effect on the retail price of the eggs was not reported (WATTAgNet, 2011).

### **Electrical Waterbath Stunning**

Chickens raised for their flesh—known in the industry as “broilers”—are not raised in battery cages. Broiler chickens live on an open floor in a long, narrow single-story confinement shed. According to Norwood and Lusk, industrial methods—primarily the controlled environment of the shed, selective breeding, the routine administration of antibiotics to the entire flock, and the controlled dispensing of scientifically formulated food—have made chicken farming “twice as efficient” as in 1940. “[M]odern broiler breeds produce twice as much meat for the same amount of feed” (Norwood and Lusk, 2011, p. 128). Needless to say, productivity increases on this scale have led to significant reductions in unit cost. “The retail price of broilers was \$3.08/lb in 1960 (in inflation adjusted terms) but was only \$1.28/lb in 2009. Chicken meat is almost 2.5 times less expensive today than it was in 1960” (Norwood and Lusk, 2011, p. 128).

In terms of welfare reforms, Norwood and Lusk observe, accurately, that, “Few alternatives to traditional broiler production are feasible, at least, not any that can generate comparable levels of output at similar cost” (Norwood and Lusk, 2011, p. 131). As a result, the only proposed welfare reform that has generated significant activity in the animal rights community (because it is the only reform that has any possibility of being implemented) has to do with the method of slaughter.

The problem confronting every high-volume slaughterhouse is how to immobilize the animals so that the killing, which is done by slitting the throat, is accomplished quickly, with as

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few workers as possible, and with minimal bruising to the flesh (although bruising is becoming less important, as I will explain below). Large animals, such as cows or pigs, are typically herded into narrow individual stalls, where they are struck in the head and knocked unconscious by a piston fired from a device called a captive bolt pistol. But birds have such small heads that this is not feasible for poultry. And so, the industry has adopted a method for immobilizing the birds known as “electrical waterbath stunning.” The birds are pulled individually, by hand, from the crates in which they have been transported to the slaughterhouse, flipped upside down and hung by their feet from an overhead conveyer belt. The belt passes over a pan of water through which runs an electrical charge, dipping the birds’ heads—and sometimes upper bodies—into the electrified liquid.

The efficacy of electrical waterbath stunning is the subject of intense debate. Industry experts argue that the electric shock renders the majority of birds unconscious, although they generally concede that some birds are merely paralyzed without losing consciousness. Animal rights advocates argue that the shock leaves substantially all of the birds conscious, and thus terrified, as—paralyzed by the electrical shock—they are whisked along by the conveyor belt to have their throats slit—still fully awake. Even within the industry, there is disagreement about the optimum type of current (AC or DC), and the optimum voltage and amperage for rendering the maximum number of birds fully unconscious and keeping them unconscious long enough to allow the throat-slitting to be accomplished without causing internal hemorrhaging that would soak the flesh with blood and cause consumers to refuse to buy it.

Some electro-encephalographic (EEG) tests have suggested that most chickens who are subjected to electrical waterbath stunning do, in fact, lose consciousness, but that even under controlled laboratory conditions, no electrical waterbath stunning system will render more than 96% of the birds unconscious—and the number may range well below that depending on the type, voltage and amperage of the current (European Food Safety Authority, 2012). And, of course, ideal laboratory conditions do not exist in an abattoir. Other studies purport to show that electrical waterbath stunning can be virtually 100% effective if the proper type and amount of current is administered (Lines et al., 2011). Still other studies have found that few if any birds are rendered fully unconscious prior to their throats being slit. (Shields and Raj, 2010). There is no

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consensus on this point in the animal science community—in part because of the difficulty of obtaining reliable data under actual abattoir conditions and in part because there is no general agreement on how to define and determine unconsciousness in birds, whose brains are organized differently from mammalian brains, and whose functioning is less well understood. Thus, Sara Shields and A. B. M. Raj, leading researchers in the field—Shields at the Humane Society of the United States and Raj at the University of Bristol in the UK—tell us that, “The EEG analytical procedures used to determine the state of consciousness vary widely and are constantly evolving. Therefore, the debate about the persistence of consciousness at the time of onset of convulsions may continue until further research provides insight into or elucidates the brain mechanisms associated with convulsions and the state of consciousness” (Shields and Raj, 2010).

And so, at least for the present, slaughterhouse operators can argue that it has not been proven that electrical waterbath stunning fails to render the birds unconscious in much the same way that cigarette manufacturers for decades could argue that it had not been proven that smoking causes cancer. But at this point, the preponderance of the evidence seems to indicate that many, and perhaps virtually all, stunned birds remain conscious until their throats are slit (Shields and Raj, 2010).

The only alternative to electrical waterbath stunning that has been seriously proposed is controlled atmosphere stunning (CAS)—sometimes known as controlled atmosphere killing (CAK), as I will explain in a moment—of which there are two forms. In both variations, the birds are left in their transport crates and the crates are stacked in a sealed room. In the first variation, called low-atmosphere stunning, the air is removed from the room until the birds lose consciousness. In the second, known as gas stunning, carbon dioxide (CO<sub>2</sub>), an inert gas such as argon, or a mixture of CO<sub>2</sub> and an inert gas—is introduced into the room with a view to rendering the birds unconscious before they experience the terror that accompanies suffocation. It is also possible, of course, in both low-atmosphere stunning and gas stunning, to prolong the process until the birds die. This is the method usually preferred by animal activists on the grounds that it avoids any possibility of birds regaining consciousness before their throats are slit. The industry, on the other hand, generally prefers to stun the birds in the controlled atmosphere chamber, rather than kill them—apparently for reasons of public relations. As one

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producer told *The New York Times*, “I don’t want the public to say we gas our chickens” (Neuman, 2010).

From a welfare perspective, controlled atmosphere killing/stunning is clearly preferable to electrical waterbath stunning, first because the birds remain in their transport crates until they are unconscious or dead; they do not undergo the psychological stress and risk of painful physical injury that accompany being pulled from their crates and shackled upside down to a conveyor belt; second, they are spared the painful electrical shock; and finally, controlled atmosphere killing/stunning can approach 100% effectiveness under slaughterhouse conditions, which electrical waterbath stunning has never been shown to accomplish in an actual working abattoir. The industry, however, is fiercely resisting conversion to CAS, presumably because they believe that it will increase costs. Although this is disputed, the best available evidence suggests that they are right.

In 2007, the European Commission sponsored a study on the economic effects of various forms of animal slaughter. In regard to poultry, the study determined that the cost of a new controlled atmosphere stunning system is from three to five times the cost of a new electrical waterbath system, depending on the manufacturer and the type of system chosen. The authors also estimated that this capital investment could be recouped in two years by a plant running at full capacity (European Commission, 2007, p. 38). Since, as we shall see next, operating costs for controlled atmosphere stunning systems are higher than for electrical waterbath systems, the capital investment would have to be recovered by raising prices—if only minimally.

As to operating costs, the study had this to say,

Running costs per bird depend heavily on the system being used and also on throughput. It is therefore very difficult to make generic comparisons between systems. However, *equipment manufacturers are unanimous in the view that controlled atmosphere systems result in a higher running cost per bird compared to electrical stunning systems.* The cost of actually administering stun using electrical stunning systems is considered by most equipment manufacturers and slaughterhouses to be negligible. . . . Although there is general agreement that the running costs of electrical stunning are insignificant, there is a wide discrepancy in the figures presented above for controlled atmosphere systems.

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Different sources disagree on the exact difference in costs between the two systems, although it is clear that even if controlled atmosphere stunning systems are relatively more expensive than electrical stunning methods, the actual cost of administering stun per bird remains relatively small.” (European Commission, 2007, p. 39)

This leads the authors to conclude, “The small proportion of consumer price that is accounted for by the cost of stunning means that more expensive methods, such as controlled atmosphere stunning, are unlikely to have any appreciable impact on the final consumer price for poultry (European Commission, 2007, p. 1).

By this analysis, the situation with controlled atmosphere stunning for poultry is similar to the situation with group housing for pregnant female pigs: the welfare measure will increase costs by a small amount, but any resultant increase in retail price will fall within the limits of consumers’ willingness to pay. Thus, the increase can be passed along to consumers without affecting the market. Producers’ profits will be unaffected.

Temple Grandin agrees with the European Commission that controlled atmosphere stunning will increase the operating costs of slaughterhouses, but disagrees that the increases will be minimal. Whatever opinion one may hold of the ethical status of Professor Grandin’s work, she is among the world’s most knowledgeable specialists in the field of welfare measures for farmed animals—and she gained her reputation by devising methods, such as her famous low-stress chute for cattle going to slaughter, that *reduce the operating costs of factory farms and slaughterhouses by reducing animal suffering* (Grandin, 2010a). (I will have more to say about this shortly.) Furthermore, she consulted on the design of a controlled atmosphere stunning system for poultry with Bell and Evans, a major manufacturer of chicken products (Neuman, 2010). Grandin’s estimate of the cost implications of controlled atmosphere killing is unequivocal: “A major disadvantage of gas stunning is high installation and operating costs” (Grandin, 2010b).

Finally, as I noted above, the industry is fiercely resisting conversion to controlled atmosphere stunning, a strong indicator that they believe it will raise their costs. People for the Ethical Treatment of Animals (PETA) disputes this view, arguing that conversion to CAS will, in fact, lower operating costs—due primarily to lower labor costs and less meat lost to bruising and

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hemorrhaging. This, in turn, PETA argues, will enable slaughterhouse operators to enjoy lower operating costs (as opposed to the higher operating costs projected by the European Commission and Temple Grandin) and to recoup their initial capital investment within 13 to 16 months (rather than the 24 months projected by the EC) (PETA).

PETA's conclusions rely heavily on hypothetical extrapolations from the meager data that was then available. Their analysis was published before the EC report, and certain of PETA's key projections now appear to have been optimistic, especially in regard to cost savings from improved meat quality. And, in fact, the EC report cautions against making generalized estimates of economic impact based on improved meat quality.

The economic impact of animal welfare technologies is difficult to assess. On the one hand the cost of implementing such measures might be expected to be known, although in practice this will be dependent on the individual circumstances of slaughterhouses. On the other hand, the economic benefits realized through improved meat quality are harder to quantify (by equipment manufacturers, operators and other key stakeholders), although it is recognized by all actors that they do exist. (European Commission, 2007, p. 20)

The EC report goes on to note that, “[I]ncreases in the popularity of other products, for example processed wings, may change the traditional economic analysis” (European Commission, 2007, p. 21). Bruising and minor hemorrhaging are not visible on Buffalo Wings, Chicken McNuggets, frozen chicken patties, and other processed chicken products. And so bruised and hemorrhaged flesh intended for this market is shipped rather than discarded—which means that improvements in meat quality do not represent a cost saving in this burgeoning segment of the market. Bruising and hemorrhaging that occur during slaughter are more of an aesthetic than a human health concern, since such bruises typically do not involve a break in the skin that would allow pathogens to enter.

In part, the PETA analysis bases its estimate of how long it will take operators to recover the cost of conversion to a CAS system on a 2006 telephone conversation between a PETA staff member and Temple Grandin (PETA). But we have just seen that Professor Grandin regards “high installation and operating costs” as “a major disadvantage” of controlled atmosphere systems—suggesting that her analysis of the data is less sanguine than PETA's. Finally, if

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PETA's projections are realistic, it is hard to understand why operators are not tripping over one another in a mad dash to install CAS systems.

Several years ago, The Humane Society of the United States posted on its website a report arguing that conversion to controlled atmosphere killing would result in significant cost savings for slaughterhouses. In 2006, HSUS took the report down from their website at the request of its author, who said that after further research s/he no longer believed it was accurate.

The following comment from HSUS President Wayne Pacelle's blog of November 29, 2010 suggests that HSUS does not, in fact, believe that CAK/CAS results in lower operating costs for slaughterhouses:

With opinion polls showing that consumers are willing to pay more for higher welfare products, the response of major producers should be to shift to more humane methods [he is referring specifically to CAK/CAS, NP], not to do things the same way and simply rebrand the same old product (Pacelle, 2010).

## **Where Price Is Unimportant: The Anomalous Cases of Foie Gras and Veal**

### *Foie Gras*

Foiegras is a diseased organ, the liver of a goose or duck who has consumed far more fat than she can metabolize or eliminate; as a result, she has developed a pathology known as steatosis, in which her liver swells to more than six times its natural size, a painful and debilitating condition. Since it is virtually impossible to induce geese and ducks to consume voluntarily enough fat to cause steatosis, nearly all producers—including all large commercial producers—force feed their birds by inserting a tube down their throats and pouring directly into their stomachs corn that has been boiled in fat. The process is inherently cruel and there is no apparent way to make it less so. Attempts in recent years to produce “humane foiegras,” have either not been shown to inflict less suffering than traditional methods or have not proven feasible on a scale that could accommodate the global market (Glass, 2007). And so, for all practical purposes, foiegras remains an all-or-nothing proposition.

### *Veal*

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Veal, long prized by gourmands for its tenderness and white color, is the flesh of a young calf—most often the male child of a dairy cow who must be repeatedly impregnated if she is to continue giving milk. Taken from their mothers when they are no more than three days old (so the farmers can take the milk that otherwise the calves would drink), veal calves have historically been confined in “tethered stalls”—also known as “veal crates”—so tiny that they cannot turn around, where they are fed a liquid diet that contains inadequate iron (or no iron at all) until they are slaughtered at 16 weeks. Veal is tender because the calf was unable to exercise and strengthen his muscles; it is white because he suffered from iron deficiency anemia.

Over the last fifteen years or so, producers have moved away from veal crates to larger stalls or group housing (i.e., several calves living in a confinement shed with an open floor on which they are able to move around). Two decades ago, all veal calves were raised in crates; today 35% of veal calves are raised in some form of group housing and, according to the American Veal Association, by 2017 all veal calves will be raised in group housing (Norwood and Lusk, 2011, p. 144; Wren, 2011). With few exceptions, however, veal calves are still fed a liquid diet (which in recent years may contain at least some iron).

Because veal has always been such a small part of the American meat market and because veal production has declined dramatically in recent years, the cost impacts of welfare reforms have not been established with any certainty or consistency. What seems likely is this: cattle, even very young cattle, are better able to fend for themselves than other farmed animals such as pigs or chickens. Hence, group housing, or even pasture access—which some veal producers are experimenting with—would likely lower production costs due to decreased expenses for equipment and labor—but at the cost of making the veal tougher and pinker than the veal prized by epicures and wannabe epicures, who have always been the bulk of the market—thereby lowering the price that consumers would be willing to pay. Even so, the largest single cost factor in raising veal calves is their food—typically based on some combination of whey and soy—and so the cost of producing veal fluctuates with the price of whey and soy regardless of the type of housing employed (Wren, 2011).

Campaigns against veal crates and the iron-deficient diet, which began in the 1970s and gained serious traction in the 1980s, have arguably been the most successful of any campaign

conducted by the American animal rights movement. Never a staple of the American diet, veal consumption declined from 5.2 pounds per person in 1960 to 0.4 pounds in 2008 (Norwood and Lusk, 2011, p. 141). By comparison, beef consumption, which has been declining for nearly a decade, is expected to be approximately 55 pounds per person in 2013 (Economic Research Service, 2013). Since veal's primary consumers are affluent and image-conscious, the veal market is less sensitive to price increases and more sensitive to societal censure than are the markets for other animal products, with the exception of luxury items like foiegras, caviar and fur. Thus, the dramatic decline in veal consumption should be attributed to two factors: the negative public image of veal production created by animal welfare campaigns, and the degrading—as a result of welfare reforms intended to overcome this negative image—of the qualities most favored by consumers of veal: tenderness and whiteness.

In this connection, it is important to note a crucial difference between the industrial production of foiegras and veal on the one hand and the industrial production of all other animal products on the other. The industrial production of all animal products except foiegras and veal has as its primary purpose the maximization of profits through increases in productivity. By contrast, foiegras and veal are produced by industrial methods because these methods are essential to producing the product (foiegras) or to producing a product with the peculiar qualities that are desired by affluent, status-conscious consumers (veal).<sup>4</sup>

### **Some Observations About Welfare Reforms**

1. The history of animal agriculture since World War II has been the story of dramatic increases in productivity brought about by technology, chemistry, and the application of rigorous management techniques to the business of raising animals.
2. These increases in productivity have brought about equally dramatic decreases in the unit cost of production—and therefore in the retail price—of meat, eggs and dairy.
3. These productivity increases—and the resultant low prices—have been achieved at the cost of catastrophic increases in the suffering of farmed animals. Modern animal agriculture involves a direct trade-off: cheap animal products for horrific cruelty.

4. The gravamen of most welfare reforms is to abandon or moderate the techniques and technologies that have increased the productivity of animal agriculture and move toward some compromise between industrial farming methods and traditional “free-range” farming. This nature-oriented category of reforms—which includes group housing for breeding sows and cage-free housing for laying hens—lowers productivity and raises the per-unit cost of production. The degree of economic impact varies according to the nature and scope of the reform.<sup>5</sup>
5. An alternative approach to welfare reform is to move in the opposite direction and use advances in technology, animal science, and facility design to reduce the suffering of farmed animals. Two salient examples of this approach are: 1) controlled atmosphere stunning and 2) the kinds of design and equipment modification promoted by Temple Grandin, such as her curved chute for moving cattle into slaughterhouses. Reforms in this technology-oriented category sometimes lower costs (as with Grandin’s cattle chutes) and sometimes raise them (as with CAS). But, thus far at least, they have not been shown to have a significant economic impact.

### **Changing Meat, Eggs and Milk into Luxuries**

The claim that welfare reforms promote animal agriculture by increasing producers’ profits is unfounded. Some changes in equipment and facility design can lower simultaneously the stress felt by animals and the operating costs of producers, but these typically have only a small impact on the overall cost of production and even less impact on retail prices. Given the fact that animal agriculture will not be abolished for decades—perhaps centuries—the welfare benefit to animals would appear to outweigh any marginal economic benefit to farmers.

As a general rule, however, welfare reforms increase operating costs, they do not lower them—although the precise amount of increase cannot always be projected with certainty until producers have more experience with reforms. Norwood and Lusk sum up the issue this way:

Improving animal welfare will certainly increase production costs at the farm. People who argue otherwise are necessarily asserting that farmers are either too ignorant or too malevolent to improve animal welfare at no cost to themselves. (Believe it or not, there are people who assert that improving animal welfare will lower costs; these beliefs are

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without merit.) Another fact of which we are certain is that increases in farm production costs will cause food prices to increase... Regulations requiring improved animal care will impose some economic burden on the farmer *and* the consumer. Even food processors, wholesalers and retailers will be adversely affected. (Norwood and Lusk, 2011, p. 355, italics in original)

It is also true—again as a general rule—that the greater the benefit, and the more animals who are benefited, the higher the cost to producers. *The problem with modern animal agriculture is not that it is inefficient. The problem with modern animal agriculture is that it is an extremely efficient industry in which efficiency equates to cruelty.*

In this regard, it is important to recognize that animal agriculture has become efficiency-dependent. The easy availability of essentially infinite supplies of cheap animal products has created a market that can only be satisfied by industrial agriculture. Large-scale animal agriculture can remain profitable only by maintaining a level of efficiency that allows it to produce an unprecedented volume of food that sells on the retail market at historically low prices. The survival of America's animal-based diet depends upon producers maintaining levels of animal cruelty that are without historical antecedent.

*We can have cheap, plentiful animal products or we can have major, large-scale improvements in the welfare of the billions of animals who are enslaved and slaughtered for their flesh, eggs, or milk. We cannot have both. The arithmetic simply does not work.* Old-fashioned free-range farms cannot produce enough food to feed the human population an animal-based diet at a cost that consumers will be willing (or able) to pay.

The question facing producers is not, “Will welfare reforms increase the cost of production?” That issue is settled. The important questions for producers are: “*How much* will welfare reforms increase the cost of production?” and, “Will consumers pay the higher prices necessary to offset the increased cost?”

Thus, Seibert and Norwood offer this comment on a remark by Trent Loos, a columnist for the industry journal *Feedstuffs*: “Mr. Loos asked the correct question: are we willing to pay the higher price associated with increased farm animal welfare?” (Seibert and Norwood, 2011a).

Before his death in 2008, Bruce L. Gardner served as Distinguished Professor of Agricultural and Resource Economics at the University of Maryland, College Park. Speaking at a conference for industry executives sponsored by the U. S. Department of Agriculture in 2003, Professor Gardner was unequivocal that the lower costs associated with factory farming make possible America's abundant supply of cheap food from animals. Professor Gardner went on to say, "The issue that arises with respect to costly changes in livestock production practices is just the converse of cost decreases due to productivity gains. Kindness to animals may well cause productivity losses and cost increases. Who then would bear these costs?" (Gardner, 2003). The bulk of these added costs, Dr. Gardner believed, should be borne by consumers rather than producers on the grounds that consumers have been the principal beneficiaries of the cost reductions brought about by industrial agriculture.

It is not only producers who should be considering the cost increases associated with welfare reforms; this issue should also be near the top of the animal rights agenda. At the present time, one of the most effective ways to attack animal agriculture is to attack its productivity. Every welfare reform that reduces productivity and increases operating costs by even a small amount nudges animal agriculture away from its present posture as provider of vast quantities of cheap food to the masses and toward a shrunken role as purveyor of expensive delicacies to a small, affluent, elitist market. Over time, welfare reforms—in conjunction with an ever-expanding variety of other strategies, including vegan and abolitionist advocacy, flexitarianism, and the promotion of plant-based analogs—have the potential to turn meat, eggs and dairy into the diet of the one percent, at which point it may become politically feasible to abolish animal agriculture entirely.

Writing in 2011, Norwood and Lusk argued that, "In thirty years, cage egg production might be a relic of the past ... [due] to the activism of concerned consumers and the interest groups they support" (Norwood and Lusk, 2011, p. 318). British newspaper columnist Martin Samuel, describing the impact in the United Kingdom of the European Union's ban on battery cages, gives us this glimpse at a cage free world.

On January 1, [2012] the European Union banned battery cages, to widespread public support. Within three months egg prices went through the roof, with the product close to

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disappearing from supermarket shelves... To the consumer, the initial price hike will be around 20p per dozen, but that will grow; and the rise in the past year already stands at around 70p. Eggs are heading back to the luxury items aisle. You will no longer go to work on an egg. You'll save up for one at Christmas. (Samuel, 2012)

Although Samuel's closing sentence is a bit of hyperbole—for the foreseeable future, the British public will not have to save up for an egg at Christmas—his argument is valid. Welfare reforms move animal products away from being staples for the general public and push them—in some cases, slowly, almost imperceptibly, in other cases, more rapidly—in the direction of becoming luxuries for the affluent. A year after the reforms went into effect, egg prices in England were 40% higher than they had been before the ban—an increase that is attributed to the reforms coupled with high prices for the soy that laying hens are fed (Gray, 2013).

In the late summer of 2013, the cost-price squeeze on egg producers remains severe throughout the European Union. In August, farmers in Brittany, the major egg-producing region of France, destroyed 5 percent of one day's production, 100,000 eggs, in an action aimed at publicizing the bind that the ban on battery cages has put them in. Consumers are refusing to pay the higher prices that would be necessary to offset increased production costs, and this means that prices are falling while production costs have risen. Yves-Marie Beudet, president of the trade association for meat and egg producers in Brittany, has called for a two-year freeze on new egg facilities. The new economics of egg production demands that the number of laying hens be reduced, not increased (Du Guerny, 2013).

As prices rise and the customer base shrinks, campaigns against the cruelties unique to factory farming contribute directly to the objective of liberating animals from being born into lives of slavery leading to slaughter. An intermediate goal of the animal rights movement should be to turn beef into veal, eggs into caviar, and milk into champagne. The long-term goal, of course, must remain the abolition of all animal agriculture.

## Notes

- <sup>1</sup> Land grant universities were originally created in 1862 by federal legislation (the first Morrill Act) “which established new public institutions in each state through the grant of federal lands. The original mission of these new institutions was to teach ‘agriculture, military tactics, and the mechanic arts as well as classical studies so that members of the working classes could obtain a liberal, practical education’” (APLU, 2010). The land grant university system has been much expanded over the years and now comprises 74 land grant universities and 25 state university systems, many of which have large and prestigious schools of agriculture, including Auburn, Purdue, Florida A&M, Iowa State, Kansas State, Oklahoma State, the University of Maryland, College Park, Cornell, Ohio State, Texas A&M, and the University of Virginia (APLU).
- <sup>2</sup> The first steam tractors appeared in the 1870s and the first gasoline tractors at the turn of the 20<sup>th</sup> century. But tractors did not become popular until the 1920s, after Henry Ford, in 1922, sharply reduced the price for his small, practical “Fordson” model, which had been introduced about five years earlier (White, 2010).
- <sup>3</sup> A “finished pig” is one who has reached a weight of 240 to 260 pounds, at which point he is sent to slaughter.
- <sup>4</sup> Foie gras and veal are produced by methods that predate the industrial revolution in agriculture. But these methods are at least proto-industrial in that they rely on technology (the stomach tube) and facility design (the veal crate).
- <sup>5</sup> By “the scope of the reform,” I mean the percentage of animals in the flock or herd that are affected. Eliminating gestation crates for breeding sows has a narrow scope; eliminating battery cages for laying hens has a wide scope.

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