

What's Wrong with Animal *By-products*?

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Abstract *Without looking beyond the conditions under which laying hens typically live in the contemporary U.S. egg industry, we can understand why the production and consumption of "factory farmed" eggs could be judged immoral. However, the question, "What (if anything) is wrong with animal by-products?" cannot always be adequately answered by looking at the conditions under which animals live out their productive lives. For the dairy industry looks benign in those terms, but if we look beyond the conditions under which milk cows live, we can better understand some animal rights activists' reasons for objecting to dairy products. The contemporary U.S. dairy industry requires a slaughter industry between one-seventh and one-third the size of the contemporary beef industry. Today, beef slaughter is vastly more humane than poultry slaughter, but if today's beef slaughter industry is judged immoral, the contemporary dairy industry should be judged similarly immoral, because the two are wedded. This is the deep reason for moral suspicion of the dairy industry.*

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The edible products of animal agriculture fall into two basic categories: by-products like eggs and dairy products, which can be produced without slaughtering the animal, and meats, which cannot.¹ The fact that such by-products are obtained from an animal without slaughtering it would appear to be morally significant. Slaughter seems to call for a stronger justification; presumably it is worse to kill an animal than to appropriate its eggs or milk.

Nevertheless, it is possible to treat animals so badly in the process that the by-products themselves become morally suspect.² For this reason the egg industry was one of the primary targets of the nascent animal rights movement. Following the Second World War, poultry farmers achieved significant economies of scale with large, automated confinement systems, and consequently over 90% of U.S.

laying hens were caged by 1990.³ Although a \$2.5 million capital outlay is required to set up a 300,000 layer operation, only one laborer is needed to maintain 100,000 birds with the aid of mechanized feeding, watering, sanitation, and egg collection equipment.⁴ In such operations, routine culling of underproducing hens is uneconomical, and the whole flock is replaced when production drops below a certain rate, usually every 12–15 months.⁵ Animal rights activists object (correctly, I think) to the degree of confinement in such systems and to other aspects of the daily lives of these hens (e.g. the lack of roosts, of places to scratch, dust-bathe, or forage in a natural way).

But what about dairy products? Without looking beyond the conditions laying hens are subjected to in the course of their daily lives, we can understand why the contemporary U.S. egg industry could be judged morally objectionable. By contrast, dairy cattle grazing a field in the temperate Wisconsin summer do not look badly off at all, even if they are suckled twice daily by voracious mechanical calves.

It is not surprising, then, that the leading authors in the literature on animal rights have tended to ignore the dairy industry or to display an ambivalent attitude towards it. For instance, Bernard Rollin, in his widely read *Animal Rights and Human Morality*, fairly openly criticises the contemporary U.S. beef industry but mentions dairy products only once, noting that “evidence . . . indicates that milk yield from dairy cows is a function of the care and attention the cows receive from the herdsman.”⁶ Rollin thus suggests that while there is something wrong with the U.S. beef industry, the dairy industry is OK. Similarly, Tom Regan, whose *The Case for Animal Rights* presents the best philosophical defense of a strong animal rights position, attacks only the eating of *meat* in the section titled “Why Vegetarianism is Obligatory,”⁷ and in *The Moral Status of Animals* Steven R. L. Clark attacks only the consumption of “flesh foods.”⁸ Regan even cites the original edition of Francis Moore Lappé’s *Diet For a Small Planet* as an example of a good nutritional guide for vegetarians,⁹ but the amino acid balancing techniques in the original edition of Lappé’s book often as not involved the use of dairy products.¹⁰ Even Peter Singer, who noticed the connection between the dairy industry and the veal industry in the original edition of *Animal Liberation*,¹¹ characterized the dairy industry in relatively positive terms as “the last major area of animal rearing to deprive its animals of all freedom of movement, since it is necessary to bring the cows to the milking parlor twice a day and then return them to pasture.”¹² He then allowed that:

A reasonable and defensible plan of action is to tackle the worst abuses first and move on to lesser issues when substantial progress has been made. It is more important to encourage people to stop eating animal flesh . . . than it is to condemn them for continuing to eat milk products.¹³

In the second edition of his book, Singer casts a grimmer light on the dairy industry, deleting the relatively positive characterization of it, and stressing instead the

increasing use of confinement systems and the further intensification promised by the use of bovine growth hormone and cloning.¹⁴

The dairy industry looks much better than the egg industry because it is (or at least has so far been) so much less intensive. Nevertheless, many animal rights activists are vegans who avoid not only meats and eggs, but dairy products.¹⁵ If we shift attention away from the conditions under which milking heifers are kept on a daily basis, and focus instead on the dairy industry's connection with the beef industry, we can understand their suspicion of the dairy industry.

I mentioned above that in state-of-the-art operations, laying hens are replaced every 12–15 months. What this means is that the contemporary U.S. egg industry requires a great deal of slaughter. To keep a modern egg farm with 300,000 layers going there would have to be about 600,000 births per year: 300,000 males on the way to getting 300,000 replacement layers (assuming a 50/50 sex ratio). That is, *in a system using modern production techniques, every year we have to slaughter roughly twice as many chickens as there are active laying hens.* So the contemporary egg industry is tied to large-scale poultry slaughter.

A less extreme, but analogous relationship exists between the contemporary U.S. dairy and beef industries, as a few basic facts serve to illustrate. First, the goal of dairy farmers has long been to maximize lifetime milk production by breeding heifers to calve at 24 months and once per year thereafter. This ideal is repeated in both the older textbooks found only on the dusty shelves of library annexes¹⁶ and in the dairy science textbook currently in use at Texas A&M,¹⁷ which even estimates the farmer's "lost income for each day the calving interval is prolonged beyond 365 days" at between \$2.35 and \$4.60.¹⁸ Contemporary textbooks differ only in how long they recommend keeping cows in production. Today, "The average length of time that a cow stays in a milking herd varies between 3 and 4 years in most areas of the U.S.,"¹⁹ whereas older textbooks recommend keeping cows longer, in the belief that production gradually increased up to 6 or 8 years of age.²⁰ It is hard to estimate the average natural lifespan of dairy breeds, because "most are culled before they get old."²¹ However, the "mature equivalent" tables in older textbooks, which were used to compare the milk production of heifers prior to and after maturity (at 6–8 years) went as high as 14 years,²² implying that some cows were lactating as late as 14 years, and perhaps calving as late as 13 years. So we may safely assume that the lifespan of cattle in captivity would be at least 10 years.

The picture that emerges from these few facts is this. On a contemporary U.S. dairy operation, the goal is to retire from 25 to 33% of the herd each year while producing one calf per milking heifer per year. Herd sizes vary by geographic region, but the average for the U.S. taken as a whole is about 75.²³ So, assuming that the farmer's goal was achieved, each year on the average U.S. dairy farm, 75 calves would be born and as many as 25 milking cows would be retired. Assuming that the farmer continued to milk only 75 heifers, only 25 of the calves born each year could eventually serve as replacements for retiring milkers, so 50 calves would never be milked. Of these 50 slaughter calves, an average of 37.5 would be male and 12.5 would be female, assuming a 50/50 sex ratio among the original 75

calves and taking into consideration the fact that the 25 replacement heifers are all female. If slaughter was ruled out and cattle lived at least 10 years on average, this would mean that for the first decade 75 head of cattle would be added to the cattle population of the average dairy farm each year, even if all bulls and all non-productive heifers were sterilized. Apparently, then, if dairy farmers achieved their goal, *each year we would have to slaughter about as many cattle as there are milk cows in the United States, in order to maintain the contemporary U.S. dairy industry while avoiding a bovid population explosion.* Since there are about 10 million active milk cows in the United States and something over 30 million cattle are slaughtered yearly, this translates into a slaughter industry upwards of one-third the size of the contemporary U.S. beef industry.²⁴

Of course dairy farmers do not always achieve their goal. It is not unusual to need two or three inseminations to impregnate a cow, and consequently heifers actually calve at somewhat less than once a year on average. More significantly, calf mortality rates on U.S. dairy farms often range up to 20% in the first year of life,²⁵ so we would expect the rate of population growth in actual dairy herds to be much slower than in our intuitive scenario. Government slaughter statistics bear this out. From 1988 through 1991, calves and retiring dairy cows accounted for 15.4, 15, 13.5, and 13.2%, respectively, of the total cattle slaughtered,²⁶ that is, one-seventh or slightly less.

But whether the contemporary dairy industry provides one-third, one-seventh, or even only one-tenth of the cattle slaughtered yearly in the U.S., the basic picture that emerges is the same: no amount of justifiable tinkering with the numbers will eliminate the need for large-scale slaughter of cattle to accompany the contemporary U.S. dairy industry. A dairy cow is just a low-grade beef cow with a 3-year stay of execution. So animal rights activists could argue that however humane the treatment of dairy cows is on a day-to-day basis, the production and consumption of contemporary dairy products is immoral, because the U.S. beef industry is immoral, and the dairy industry depends on the beef industry in the same way the egg industry depends on the poultry industry.

Is the U.S. beef industry immoral? What it and the poultry industry have in common is that, perhaps contrary to first appearances, both depend on large-scale slaughter of the animals from which the by-products are taken. Yet the beef industry compares very favorably with the poultry industry in two ways.

First, the scale of poultry slaughter is dramatically greater. While something over 30 million cattle are still slaughtered annually in the U.S., the number is declining. But over six *billion* chickens are slaughtered annually, and the number is rising fast. In the late 1980's and early 1990's, the number of cattle slaughtered in the U.S. declined steadily, at a rate upwards of one million animals per year. At the same time, however, the slaughter of chickens grew at a rate of about 300 million animals per year.²⁷ Ironically, then, the drop in beef consumption, ostensibly a gain from an animal rights perspective, was offset by the rise in poultry consumption. Indeed, in terms of the number of animals slaughtered, it was offset by almost 300%!

Second, poultry slaughter is still a decidedly indelicate affair, whereas the slaughter of beef has been improved dramatically since the turn of the century. In contemporary systems, poultry are transported in open trucks, exposed to intense, unfamiliar stimuli. At the slaughterhouse, they are grabbed by their legs and hung, conscious and upside down, on a conveyor belt which carries them through a beheading machine. My sense is that, because birds are so much more highstrung than cattle, the humaneness of poultry slaughter cannot be improved without dramatically down-scaling it. With cattle, by contrast, the most humane systems currently available are also capable of being operated at the highest rates. State-of-the-art double-track conveyor systems can handle several hundred animals per hour with minimal distress to the cattle being slaughtered. The races approaching the kill chute can be made identical to those through which the cattle have traveled previously for veterinary care. The races can be given solid sides of a height allowing handlers to easily appear and disappear from each animal's flight zone, making it easy to drive animals without prodding them. Cattle in such races, managed by experienced handlers who rarely prod,²⁸ do not show signs of unusual excitement. Although killing floors can be ventilated so that air moves into the building from the kill chute, cattle do not appear to "smell blood in the shutes," contrary to popular belief. Finally, "stunning" is a misnomer for what finally happens to cattle in such systems. A properly-aimed shot with a pneumatic captive-bolt pistol obliterates the cow's brain, making it impossible for a properly "stunned" cow ever to regain consciousness.²⁹ So contemporary U.S. cattle slaughter is—at least arguably—about as humane as slaughter can be made, in stark contrast to U.S. poultry slaughter, which is still exempt from federal humane slaughter legislation.³⁰

What one makes of the relative humaneness of contemporary beef slaughter depends crucially on how one conceives of harm and death for the animals involved. A hedonistic utilitarian perspective would be that harm is adequately unpacked in terms of felt pain and/or lost opportunities for pleasure. An implication of this view is that animals are replaceable, morally speaking. For if a happy animal dies a painless death and is replaced by an equally happy animal, then the world contains no more pain and no less pleasure. The slaughtered animal has been harmed, in that it has lost all future opportunities for pleasure, but in the aggregate, nothing has changed.

Self-professed animal welfarists tend to adopt a hedonistic utilitarian stance. Scientists argue that if pain is eliminated from an experimental protocol, there is nothing left to question from an ethical perspective. And defenders of animal agriculture argue that if slaughter and handling are rendered no more stressful than routine veterinary handling, then the existence of any benefit to humans is sufficient to justify this humane use of animals. Even Peter Singer adopts the replaceability view with regard to non-mammalian animals, including chickens. (This surprises most agriculturalists only because, like most animal rights activists, they have not read Singer's professional work, but only his philosophically superficial *Animal Liberation*. In that book, Singer intentionally avoided complex philosophical questions with important practical implications.³¹ Readers wishing

to understand Singer's views must read his *Practical Ethics*, which contains the definitive statement of his position on ethics and animals.³²⁾

Singer denies, however, that the replaceability argument can be used to defend the slaughter of cattle. He holds that mammals are not replaceable, because, like humans, they are "self-conscious individuals, leading their own lives and wanting to go on living."³³ He reasons that such creatures are not replaceable, because when an individual with future-oriented desires dies, those desires remain unsatisfied, even if an individual with similar desires replaces it and has those desires satisfied.

With regard to humans, the hedonistic conception of harm seems implausible. Talking about lost opportunities for pleasure does not seem an adequate way of describing the harm suffered by a woman who dies in the prime of her life. Yet I doubt that the desire for continued life extends nearly as far down the phylogenetic "scale" as Singer believes. Non-primate mammals like cattle probably have future-oriented desires, but it probably is a very short-term future about which they are concerned and they probably do not desire continued life in the same way normal humans do. The desire for continued life requires considerable conceptual sophistication—not just rudimentary self-consciousness, but also the concepts of life and death, and I seriously doubt that cattle have these concepts. Premature death is tragic for a normal human being in a way that it is not for most non-human animals, because humans have long-range projects³⁴ whereas most animals do not. My cat probably thinks about what to do in the next moment, but probably not about her kittens' futures.

Nevertheless, my own view is that the burden of proof is on the defenders of animal slaughter, because animals like cattle do have future-oriented desires (albeit relatively unsophisticated ones) and the continued satisfaction of such desires is, other things being equal, a good thing. So whatever else can be said on the matter, a world in which human beings and domesticated animals both continued to live and fulfil their desires would be a better world than one in which animals die in the service of human beings. And this would be equally true if they were slaughtered painlessly. So my view is that, other things being equal, we improve the world to the extent that we eliminate slaughter of every kind.³⁵

This leads me to take seriously the question: To what extent would it be possible to sever the dairy and egg industries' ties to large-scale slaughter?

Just how nearly we could approach a slaughterless ideal, I cannot say, but with regard to egg production, at least, it seems clear that the tie to slaughter could be dramatically reduced, if not wholly severed. This is because artificial lighting can be used to cause a 24-week hen to begin laying at any time of year, and she will continue to lay almost daily so long as the eggs are removed often enough to prevent her becoming broody. Layers do have to be freshened periodically in order to maintain high productivity, but this is done by forced moulting rather than mating,³⁶ so hens can continue to yield eggs indefinitely without producing any offspring. This suggests that egg production could in principle be severed from poultry slaughter.

Milk production is a more complicated issue. Presumably the period between freshenings and the number of years heifers spend on line could both be

lengthened dramatically, but I do not know how far it would be possible to go in reducing the number of births.

A second complicating factor is the role of large animals like cattle in sustainable agriculture. Sustainability, like justice, is what W.B. Gallie called “an essentially contested concept,” one which is clearly normative—it is used to praise a certain kind of achievement—but which is “persistently vague” or “open” in character, with factions aggressively defending competing exemplars of what it is so good to achieve.³⁷ In some visions, sustainability implies no more than the survival of a single productive activity across some specified length of time; in others, it implies the existence of a whole way of life, centered around the family farm.³⁸ However, my sense is that, without sorting through the myriad conceptions of sustainability, we can conclude that in any contextualized vision of sustainability, animals are going to have *some* role to play in sustainable agriculture.

By a contextualized vision of sustainability I mean one which is sensitive to the varying needs of developed and developing nations and of cultures existing in very diverse habitats. From such a perspective, animals will have to play an important role in agriculture in at least some if not many or most locales and eras. First, because animals are a necessary component in the agronomic systems of many developing nations, where they provide draft power and fertilizer. Second, many arid areas which are unsuitable for row crop agriculture are nevertheless suitable for grazing. For people to exploit such areas in a sustainable fashion, they will have to practice *animal* agriculture. Whether people should even inhabit such “marginal” lands is in principle an open question, but concerns about the distributional aspect of famine relief efforts and respect for cultural diversity both point in that direction. Finally, even in industrialized nations, it is arguably better to fashion clothing and other products out of renewable resources, including leather, rather than non-renewable resources like petroleum derivatives.

So arguably, animal agriculture will have a role to play in any sustainable society, and I cannot say to what extent that role can be played without slaughter. Nevertheless, I am certain that the tie between the egg and poultry industries in a country like the contemporary United States could be dramatically weakened, and that between the dairy and beef industries could be at least significantly weakened.

It *could* be done. Whether and when we will do it is a separate question. Comparisons of the sales of “free-range” to less expensive, more intensively farmed eggs in the United States do not bode well, and although beef sales have been dropping, the cause appears to be concern for human health rather than aversion to slaughter, since (as noted earlier) increases in poultry slaughter have more than compensated for reductions in beef slaughter. But as Mark Sagoff is fond of saying, what we will pay for as consumers is not always commensurate with what we would vote for as citizens.³⁹ Often farmers who agree that reforms are needed are unable to make them because the market favors the status quo, but legislation can be used to level the playing field in a way that favors more humane practices.

I do not foresee slaughter being directly limited by legislation, but the number of poultry slaughtered yearly in the U.S. would presumably be reduced by requiring humane methods of slaughter. Imagine how much more expensive chicken would

be if the birds had to be handled minimally and rendered unconscious prior to being hung on a conveyor belt. Ideally, chickens could be raised and transported in the same trailer-sized coup and gassed immediately prior to slaughter. Presumably any less utopian system which approximated the same result would raise the price of chicken enough to significantly reduce consumption and therefore the number of birds slaughtered yearly. The cattle industry, by comparison, is moving of its own accord towards the most humane means available; older live-handling units are being replaced by the double-track conveyor system, which is superior both in terms of humane handling and ergonomics.⁴⁰

In this paper, I have not argued that the production or consumption of animal by-products is immoral, *simpliciter*. My primary goal has been to show how the question, "What (if anything) is wrong with animal by-products?" cannot always be adequately answered by looking at the conditions under which the animals from which we take them live out their productive lives. Increasingly, individuals who adopt a vegan diet do so out of concern for the well-being of farm animals, and the institutional association between animal by-products and large-scale animal slaughter, at least in a country like the contemporary United States, is one reason for questioning the production and consumption of animal by-products, quite independently of the day-to-day treatment of the animals involved.

Nevertheless, I have held out as an ideal a slaughterless society, and, as an attainable approximation thereof, a society with egg and dairy industries far less reliant on slaughter than are the contemporary U.S. industries. The products of a nearly slaughterless egg industry probably would be less uniform in quality, higher in price, and less widely available. Similarly, the products of a dairy industry which took seriously the admonition to minimize its reliance on slaughter probably would be more expensive and less widely available than today's dairy products. Accordingly, one concern raised by my argument is the effect these changes might have on the nutritional status of people who, like women and growing children, need more iron and calcium than healthy men in the primes of their lives. Also, it might be thought that by holding out a largely or totally vegetarian diet as a moral ideal for an affluent, industrialized nation like the United States, I am relegating the inhabitants of developing nations, whom I have said need to use animals in ways that we in the developed West do not, to a kind of moral underclass, unable to achieve the moral ideal which we can more closely approximate. Both concerns have been raised by Kathryn Paxton George in a series of papers (including "Discrimination and Bias in the Vegan Ideal," in this volume). In a companion paper ("In Defense of the Vegan Ideal: Rhetoric and Bias in the Nutrition Literature," in this volume) I address the former concern, that it would be discriminatory to advocate vegetarianism (or veganism) for women and children, and for the poor and "undereducated," even in a developed nation like the United States. Here I will briefly address the latter concern, by way of concluding.

George asks that we "validate the many *perspectives* from which humans solve problems." I have indicated that I think our reliance on slaughter today in the developed West is excessive, and that it can be significantly reduced. I have also indicated that some cultures probably will require greater reliance on slaughter.

In saying this I do not mean to claim that only those fortunate enough to be affluent Westerners are capable of cultivating a moral relationship with animals. To say that it is good to reduce slaughter where that can be done consistent with human health and flourishing is not to say that human flourishing is a bad thing in those situations where it requires slaughter. The principle of equal consideration of interests requires us to give equal consideration to the similar interests of similarly situated individuals, but it also requires us to recognize differences—it requires us to recognize those many perspectives from which humans solve problems. I would say that any culture, however differently situated from us, is capable of developing a moral relationship with animals, but that what counts as a moral relationship with animals will look very different depending on the circumstances a culture faces. All I claim is that our present relationship with animals in the developed West is far less than what it could be. Some other cultures could also do more, I am sure, but I do not know enough about their circumstances to judge. I hope to learn more.⁴¹

Notes

1. There are, however, a number of things which are commonly referred to as by-products which cannot be obtained without slaughter (e.g. leather and lard), and a few of these (e.g. lard) are edible.
2. Here I am glossing over all the problems with choice of tactics discussed by Raymond G. Frey in part five of his *Rights, Killing, and Suffering: Moral Vegetarianism and Applied Ethics* (Oxford: Basil Blackwell, 1983).
3. Carmen R. Parkhurst and George J. Mountney, *Poultry Meat and Egg Production* (New York: Van Nostrand Reinhold, 1988), p. 196.
4. *Ibid.*, p. 194.
5. Richard E. Austic and Malden C. Neshem, *Poultry Production*, 13th ed. (Philadelphia: Lea & Febiger, 1990), p. 56.
6. Bernard Rollin, *Animal Rights and Human Morality* (Buffalo, New York: Prometheus Books, 1981), p. 85.
7. Tom Regan, *The Case For Animal Rights* (Berkeley: University of California Press, 1983), section 9.1.
8. Steven R. L. Clark, *The Moral Status of Animals* (Oxford: Oxford University Press, 1984), p. xiii.
9. Regan, *Case for Animal Rights*, chapter 9, endnote #1.
10. Francis Moore Lappé, *Diet for a Small Planet* (New York: Ballentine, 1975), pp. 95ff.
11. Peter Singer, *Animal Liberation* (New York: Avon Books, 1975), pp. 180-81.
12. *Ibid.*, p. 131.
13. *Ibid.*, pp. 180-181.
14. *Animal Liberation*, second edition (Avon, 1990), pp. 137-39 and 176.
15. Note, however, that there is more variety within the animal rights community than the common portrayal of them as “wanting to eliminate all animal research, valuing animal welfare more than human welfare, maintaining a vegetarian diet, and eschewing leather products” would suggest. Even among the most committed activists (those attending the 1990 march on Washington), “More than a third . . . reported eating meat, poultry, or seafood, and nearly 40% reported buying products made with leather.” S. Plous, “An Attitude Survey of Animal Rights Activists,” *Psychological Science* 2 (May 1991), pp. 194–196.
16. Richard F. Davis, *Modern Dairy Cattle Management* (Englewood Cliffs, New Jersey: Prentice-Hall, 1962), p. 85.
17. Donald L. Bath, Frank N. Dickinson, H. Allen Tucker, and Robert D. Appleman, *Dairy*

Cattle: Principles, Practices, Problems, and Profits, third edition (Philadelphia: Lea & Febiger, 1985), pp. 79, 261, and 271. (The first draft of this paper was written during the fall semester of 1990, and this textbook was still in use then.)

18. *Ibid.*, p. 259.

19. *Ibid.*, p. 325.

20. Davis, *Modern Dairy Cattle Management*, p. 33.

21. Bath *et al.*, *Dairy Cattle*, p. 266.

22. Davis, *Modern Dairy Cattle Management*, pp. 34-36.

23. Bath *et al.*, *Dairy Cattle*, p. 15, table 1.10.

24. In the U.S., the dairy cow population declined from 11 million in 1985 to 10 million in 1991, but after 1988 the rate of decline stabilized at somewhat less than 1% per year. In the same period of time, the number of cattle slaughtered yearly declined from 36.3 to 32.9 million, dropping at a fairly steady rate of approximately 2.5% per year. Figures based on *Livestock Slaughter and Milk Production, Distribution, and Income*, both USDA publications, various dates.

25. Bath *et al.*, p. 325.

26. Based on *Livestock Slaughter*, various dates. The same publication verifies that dairy farmers are, on average, retiring between 25% and 33% of their herds annually: from 1988 through 1991, dairy cattle slaughtered numbered a fairly constant 2.8 million, that is, about 28% of the total herd size of 10 million.

27. *Poultry Slaughter*, National Agricultural Statistics Service, USDA, various dates. Hog slaughter remained fairly steady, fluctuating in the 80-90 million range. *Livestock Slaughter*, various dates.

28. Unfortunately, the live animal handlers at slaughter houses, working for entry-level wages, commonly have little previous experience driving cattle and, consequently, prod excessively. Some appear to think it necessary to prod each animal as it passes them in the race, even if the cattle are moving anyway. Similarly, drivers unloading cattle trucks commonly prod unnecessarily, when a more patient approach would unload the trailer just as effectively.

29. My thinking about slaughter has been heavily influenced by Temple Grandin of the Colorado State University Department of Animal Science. Grandin shared generously of her time, taking an entire day to lead me through a feedlot and a slaughterhouse she had designed, and she gave me a number of her publications, the most important of which were: "Livestock Handling Pre-Slaughter," *Meat 88*, International Congress of Meat and Science and Technology, August 1988; "Commentary: Behavior of Slaughter Plant and Auction Employees Toward the Animals," *Anthrozoös* 1(4) (1988), pp. 205-13; "Behavioral Principles of Livestock Handling," *The Professional Animal Scientist* 5(2) (December 1989), pp. 1-11; and "Humanitarian Aspects of *Shehitah* in the United States," *Judaism: A Quarterly Journal of Jewish Life and Thought* 39 (1990), pp. 436-446.

30. Humane Methods of Livestock Slaughter Act, 7 USCA 1901-06. The Act appears to be doubly incoherent. First, it declares that "slaughter shall be carried out only by humane methods," because this "prevents needless suffering" (1901). Yet it covers only "livestock," but not poultry, which are presumably also capable of suffering. Second, in Section 1902 humane slaughter is defined to include both methods in which "all animals are rendered insensible to pain . . . before being shackled [and] hoisted," and kosher slaughter in which animals are hoisted while fully conscious. Yet since the apparent humaneness of the former method lies in rendering animals unconscious prior to being bled, it is difficult to understand how the latter method could also be judged humane. Challenges to the exemption of kosher slaughter have not been upheld in the courts.

31. He says that including discussion of them "would have changed the nature of the book itself, turning it into a work of academic philosophy, of interest to [his] professional colleagues but tedious for the general reader." *Animal Liberation*, second edition, p. x.

32. Peter Singer, *Practical Ethics*, second edition (Cambridge University Press, 1993). On replaceability and animals, see chapters four and five, *passim*.

33. *Practical Ethics*, p. 125.

34. The subtle differences among desires, intentions, plans, and projects are analyzed by Michael R. Bratman's *Intentions, Plans, and Practical Reasoning* (Harvard University Press, 1987).

35. For a detailed development of my views on interests, desires, and ethics, see my *In Nature's Interests? Interests, Animal Rights, and Environmental Ethics*, in manuscript.

36. Carmen R. Parkhurst and George J. Mountney, *Poultry Meat and Egg Production* (New York: Van Nostrand Reinhold, 1988), pp. 203–05. Moulting is forced by restricting light to 8 hours/day while withholding food for up to 10 days. Many animal rights activists would find this unacceptable. But the forced moulting technique presumably mimicks the effects of winter scarcity, so it probably could be produced by less drastic means (for instance by reducing rations during an actual winter).

37. W.B. Gallie, "Essentially Contested Concepts," *Proceedings of the Aristotelian Society* 56 (1955–56), pp. 167–98, at pp. 171–172.

38. See, for instance, Charles Blatz, "The Very Idea of Sustainability," *Agriculture and Human Values* 9 (Fall, 1992), pp. 12–28.

39. Mark Sagoff, "At the Shrine of Our Lady of Fatima; or, Why Political Questions are Not All Economic," *Arizona Law Review* 23 (1981), pp. 1283–1298.

40. I believe new laws are needed, however, with regard to kosher slaughter and confinement veal.

41. An early (and very different) draft of this paper was presented at the Agriculture, Food, and Human Values Society's 1991 conference on "Varieties of Sustainability." Kathryn Paxton George's criticisms of that draft have been a valuable goad to my thinking on this issue. My colleagues Paul Thompson and Jon Kvanvig also provided valuable feedback on an early version of this paper.