

Ecosystem Health and Sustainable Agriculture

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Sustainable Agriculture

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An Opinion on the Role of Ethics in Modern Animal Production Systems

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CASE STUDY USA

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Industrial Agriculture

Industrialised animal agriculture, also known as confinement agriculture, intensive agriculture, factory farming (an appellation not favoured by the industry), and CAFOS (confined animal feeding operations), is a creature of the second half of the 20th century. Before that time, agriculture was extensive and pastoral, with the animals primarily housed under open, pastoral conditions. The industrialisation of animal agriculture was a major break from the agricultural systems that had prevailed since the earliest domestication of animals. It is thus fair to affirm that the majority of animal agriculture changed more during the second half of the 20th century than it did during the preceding millennia.

The key to traditional agricultural success was good husbandry of the animals. (The term is supposedly derived from the Old Norse phrase *hus/bond* – bonded to one's household.) Husbandry meant placing the animals into the optimal environment best meeting their biological and psychological needs and natures, and then augmenting their natural abilities to survive and thrive by provision of food during famine, water during drought, help in birthing, medical attention, protection from preda-

tion, etc. Since the producer did well if, and only if, the animals did well, the imperative for good husbandry was sanctioned by the most effective human concern – self-interest. It is thus reasonable to refer to husbandry agriculture as embodying an ancient contract between humans and animals, wherein both parties fared better by virtue of the contract than they would have done outside of it.

The most powerful articulation of the ethic of husbandry may be found in the 23rd psalm: The Lord is my shepherd: I shall not want. He leadeth me to green pastures; he maketh me to lie down beside still waters; he restoreth my soul.

In other words, when the Psalmist seeks a metaphor for God's ideal relationship to humans, he can do no better than the shepherd. As we know from the Bible, a lamb on its own would not long survive predation by hyenas, wild dogs, lions, eagles and other predators; with a shepherd it lives well. Animals benefit from the ministrations of the shepherd; humans benefit from the animals' products and sometimes their lives, but while they live, they live well.

In the mid-20th century, the value of husbandry as the basic value for animal agriculture was replaced by industrial values of efficiency and productivity. This was the

result of the confluence of many factors. In the first place, the US public had lived through the Great Depression and the Dust Bowl, and for the first time in American history, the spectre of insufficient food, non-affordable food, and starvation loomed as viable possibilities. Second, many people who had worked in agriculture sought better jobs and security from the vagaries of nature by moving to cities and as cities grew, urban encroachment on agricultural land became a factor to be reckoned with.

Furthermore, demographic experts predicted a sharp rise in population – more mouths to feed. The two World Wars further exposed many young soldiers to more exciting venues than e.g. rural America. As a post-World War I song put it, ‘How you gonna keep ‘em down on the farm now that they’ve seen Patee?’ Finally, the success of industrialisation in business and manufacturing reinforced the belief that it was a template for success in all areas.

The convergence of all of these mutually reinforcing vectors probably made the industrialisation of agriculture inevitable. In a telling, emblematic move, academic departments of Animal Husbandry changed their names to Animal Science, defined as the ‘application of industrial methods to the production of animals.’ The traditional agrarian values of stewardship, husbandry and way of life ever increasingly gave way to the values of efficiency and productivity.

It is fitting to tether our discussion to a pair of anecdotes experienced by the author that evoke both our balanced past and our tenuous future in the area of animal agriculture.

About three years ago, I was visiting a rancher friend in Wyoming, and having dinner at his home along with a dozen other ranch people. I asked the dinner guests how many of them had ever spent more money on medical treatment for their cattle than the animal was worth in economic terms. All replied in the affirmative. One woman, a fifth generation rancher, asked, with something of an edge, ‘What’s wrong with that, Buster?’ I replied ‘Nothing from my perspective. But if I were an agricultural economist, I would tell you that one does not spend \$25 to produce a widget that one sells for \$20.’ She fairly spat her reply: ‘Well that’s your mistake, Buster. We’re not producing widgets, we’re taking care of living beings for whom we are responsible!’

Virtually every rancher I have encountered – and I have lectured to around 15,000 across the US and Canadian West – would respond in a similar vein. Even if they do not spend cash, ranch people often sit up all night for days with a marginal calf, warming the animal by the stove in the kitchen, and implicitly valuing their sleep at pennies per hour! Children of ranch families often report that the only time their father ever blew up at them was when they went to a dance or a sporting event without taking care of the animals. These ranchers represent the last large group of agriculturalists in the US still practicing animal husbandry.

In contrast to this elevating anecdote, consider the story told to me by one of my colleagues in Animal Science at Colorado State University. This man told of his son-in-law who had grown up on a ranch, but could not return to it after college because it could not support him and all of his siblings. (Notably, the average net income of a Front Range (i.e. eastern slope of the Rocky Mountains) rancher in Colorado, Wyoming, or Montana is about \$35,000!) He reluctantly took a job managing a feeder pig barn at a large swine factory farm. One day he reported a disease that had struck his piglets to his boss. ‘I have bad news and good news,’ he reported. ‘The bad news is that the piglets are sick. The good news is that they can be treated economically.’ ‘No,’ said the boss. ‘We don’t treat! We euthanise (by dashing the baby pigs’ heads on the side of the concrete pen.)’ The young man could not accept this. He proceeded to buy the medicine with his own money and clock in on his day off, and treated the animals. They recovered, and he told the boss. The boss’s response was ‘You’re fired!’ The young man pointed out that he had treated them with his own time and money, and was thus not subject to firing. He did, however, receive a reprimand in his file. Six months later he quit and became an electrician. He wrote to his father-in-law: ‘I know you are disappointed that I left agriculture, Dad. But this ain’t agriculture!’

Initially, it appeared that industrialised animal agriculture had delivered on its promises. Productivity increased dramatically, driving the price of animal-based food down to the lowest in history relative to income. Those areas of animal agriculture that changed most dramatically were poultry, eggs, pork and dairy, with the beef industry moving to concentrated animal feeding units – feed lots – as

the place where cattle were ‘finished’ with grain. (Cheap and plentiful grain came from a parallel industrialisation of crop agriculture known as the Green Revolution.)

The key to the industrialisation of animal agriculture was the concentration of large numbers of animals in small spaces, usually (except for cattle feed lots), indoors. Capital replaced labour, and ‘animal smart’ people schooled in husbandry of the type of animal in question were replaced by untrained minimum wage workers with ‘the intelligence being in the system’ as one manager put it to me.

Initial optimism about confinement agriculture chilled to the point that the consequences of such an agriculture were viewed as highly problematic in many dimensions first in Europe and, beginning in the 1990’s, in the US as well. In the first place, agriculture became dominated by large vertically integrated multi-national corporate entities, causing the extinction of small independent producers. This is dramatically illustrated in the pork industry wherein, in four decades, beginning in the 1960s, the vast majority of small swine producers went out of business (by 2002 there were 87.8% fewer farms than in 1980), and five companies produced some 90% of the pork raised. Small rural communities that thrived when small producers dominated became ghost towns.

With husbandry people being largely unwilling to work in ‘animal factories’, the labour pool required to man factory farms came to be drawn from unskilled, sometimes illegal immigrant labour being paid minimum wage, resulting often in a clash of cultures with local people.

Traditional agriculture was ‘sustainable’ by its own internal logic. Animals consumed pasture, and then manure nourished the soil. If one exceeded the carrying capacity of the land, the animals would starve and forage would be destroyed. The result was a ‘balanced aquarium’ with production limited by available resources and few additional ‘inputs’ required. In other words, domestic animals became part of the ecosystem in a largely benign manner, as still occurs in properly managed Western US cattle ranching.

In contradistinction, confinement agriculture requires major expenditures (‘input’) of energy, fossil fuel, and water, to increase productivity beyond the inherent carrying capacity of an area. The animals in confinement are fed not on forage, but on grains produced in giant

monocultures highly dependent on chemical fertilisers and pesticides, which cause ecosystemic problems of erosion, aquifer contamination, depredation in soil quality. The manure produced by confined animals (a pig, for example, produces ten times as much waste manure as a human) leads to problems of waste disposal and eutrophication of waterways by nitrogen leaching into water. The presence of thousands of animals in relatively small confined areas produces air quality issues as well, which in turn affects quality of life of persons in the area and respiratory health of workers, and citizens.

The use of ‘technological sanders’, to force animals into environmental conditions they could not have survived in without technology, as it were square pegs into round holes, creates major problems as well. If we had attempted to raise 100,000 chickens in one building 100 years ago, all would have died of disease spread in three weeks. Today we can control these diseases by antibiotics and vaccines. Yet it is now clear that such use of antibiotics endangers human health by driving antibiotic resistance of pathogens.

Such forcing of animal square pegs into round holes leads to the most egregious moral problem of confinement agriculture – animal welfare. With the animals still biologically ‘meant’ for extensive conditions, confinement systems proliferate welfare problems. Sows, for example, weighing up to 600 pounds are confined in 0.5 x 1 x 2 m ‘gestation crates’ (and farrowing crates when they give birth) for their entire productive life, unable to move or even turn. Laying hens are kept in tiny cages, with very little space. Dairy cows never see pasture. Broilers are kept in groups of thousands on restricted floor space. In addition, ‘production diseases’ – diseases that would not be a problem except for the method of production – proliferate, for example liver abscesses in feedlot cattle fed a high calorie and low roughage unnatural diet. Workers are no longer ‘animal smart’. The animal’s basic biological and psychological needs and natures are no longer met.

The founders of confinement agriculture made one fatal conceptual error regarding animal welfare. They assumed that animals’ welfare was assured if the animals were productive, by and large true under extensive husbandry conditions. However they illegitimately assumed that productivity in industrial conditions still guaranteed welfare, which is not true, given the ‘technological sand-

ers' mentioned earlier. These animals may produce economically, yet are not well off, as measured by a variety of parameters, including behavioural anomalies and preference tests 'asking' the animals what they prefer.

In Europe, many of the most severe systems have been legally banned. In the US, a consumer and citizen revolution began in the first decade of the 21st century to create a more animal and environmentally friendly animal agriculture. Niche producers raising animals under more natural conditions have proliferated, as have restaurants and grocery shops specialising in such products. Citizen-initiated referenda banning high confinement have begun to appear, and public concern was recognised by Smithfield, the world's largest pork producer, when the company announced early in 2007 that it would phase out sow stalls.

For all the reasons detailed above, one can affirm that unrestricted industrial agriculture in its current form represents an experiment that failed. While it is unlikely that totally extensive agriculture can be fully restored, it is likely that a new agriculture, melding considerations of sustainability, animal welfare, human and animal health, and social concern for workers and rural communities, will emerge for the future.

- Hemsworth, P.H., Barnett, J.L. and Coleman, G.J. 1993. The human-animal relationship in agriculture and its consequences for the animal. In: *Animal Welfare* 2, 33-51
- National Pork Board. 2005. *Swine welfare assurance program*. Available at www.porkboard.org/SWAPHome
- OIE (World Organisation for Animal Health). 2005 http://www.oie.int/eng/press/en_050602.htm
- Turner, J. and D'Silva, J. (eds.) 2006 *Animals, ethics and trade: The challenge of animal sentience*. London: Earthscan.
- ## Chapter 50
- Benson, G.J. and Rollin, B.E. (eds.) 2004. *The well-being of farm animals: Challenges and solutions*. Ames, IA: Blackwell Publishing.
- Rollin, B.E. 1995. *Farm animal welfare* (Ames, Iowa: Iowa State University Press.
- ## Chapter 51
- Algers B., 2009. A risk assessment approach to animal welfare. In: Smulders, F.J.M and Algers, B. (Eds.). Food safety assurance and veterinary public health, Vol. 5, Welfare of production animals: assessment and management of risks. Wageningen Academic Publishers, the Netherlands, 223-237.
- Blokhuis, H.J., Jones R.B., Geers R., Miele M. and Veissier I., 2003. Measuring and monitoring animal welfare: transparency in the food product quality chain. *Animal Welfare*, 12, 445-455.
- Blokhuis H. J., Keeling L. J., Gavinelli A., Serratoso J., 2008. Animal welfare's impact in the food chain. *Trends in Food Science & Technology*, 19 (1), S75-S83.
- Blokhuis, H.J., Veissier, I., Miele, M. and Jones, R.B., 2010. The Welfare Quality® project and beyond: safeguarding farm animal well-being. *Acta Agriculturae Scandinavica A, Animal Science*, 60, 129-140.
- CAC, 2001. Codex Alimentarius Commission. Food Hygiene, Basic texts, FAO/WHO, Rome, Italy.
- CAC, 2002. Codex Alimentarius Commission. Principles and Guidelines for the Conduct of Microbiological Risk Assessment. Document CAC/GL 30.
- Candiani, D., Ribó, O., Afonso, A., Aiassa, E., Correia, S., De Massis, F., Pujols, J; Serratoso J., 2007. Risk assessment challenges in the field of animal welfare. In: Proceedings of the XIII international congress in animal hygiene, ISAH, June 17-21, Tartu, Estonia. 587-581.
- Candiani D., Ribó O., Barbieri S., Afonso A., Grudnik T., Berthe F., Serratoso J., 2009. Development of a risk assessment methodology for animal welfare in EFSA's scientific opinions. In: Sustainable Animal Production. The challenges and potential developments for professional farming. Eds. Andres Aland and Francois Madec. Wageningen Academic Publishers, pp. 421-434.
- EC, 2002. European Commission. Regulation (EC) No. 178/2002 of 28 January 2002, laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. *Official Journal L31, 1/2/2002*, p. 1-24.
- EC, 2005. European Commission. Community Action Plan on the Protection and Welfare of Animals (2006-2010). http://ec.europa.eu/food/animal/welfare/actionplan/actionplan_en.htm
- EC, 2006. European Commission. Future Strategy on Animal Health for 2007-2013 http://ec.europa.eu/food/animal/diseases/strategy/final_report_en.htm
- EFSA, 2004a. European Food safety Authority. Opinion of the Scientific Panel on Animal Health and Welfare related to the welfare of animals during transport. *The EFSA Journal* (2004) 44, 1-36.
- EFSA, 2004b. European Food Safety Authority. Scientific Opinion of the AHAW Panel on the welfare aspects of the main systems of stunning and killing the main commercial species of animals. *The EFSA Journal* (2004) 45, 1-29.
- EFSA, 2006. European Food Safety Authority. Scientific Colloquium "Principles of Risk Assessment of Food Producing Animals: Current and future approaches" http://www.efsa.europa.eu/en/science/colloquium_series/no4_animal_diseases.html
- EFSA, 2009a. Scientific Report on the effects of farming systems on dairy cow welfare and disease. Report of the Panel on Animal Health and Welfare. Annex to the *EFSA Journal* (2009) 1143, 1-38
- EFSA, 2009b. Scientific Opinion on the overall assessment of dairy cows welfare. Scientific Opinion of the Panel on Animal Health and Animal Welfare. *The EFSA Journal* (2009) 1143, 1-38.
- EFSA, 2009c. Scientific Opinion on the impact of housing, nutrition and feeding, management and genetic selection on leg and locomotion problems in dairy cows. Scientific Opinion of the Panel on Animal Health and Animal Welfare. *The EFSA Journal* (2009) 1142, 1-57.
- EFSA, 2009d. Scientific Opinion on the impact of housing, nutrition and feeding, management and genetic selection on udder problems in dairy cows. Scientific Opinion of the Panel on Animal Health and Animal Welfare. *The EFSA Journal* (2009) 1142, 1-60.
- EFSA, 2009e. Scientific Opinion on the impact of housing, nutrition and feeding, management and genetic selection on metabolic and reproductive problems in dairy cows. Scientific Opinion of the Panel on Animal Health and Animal Welfare. *The EFSA Journal* (2009) 1140, 1-75.
- EFSA, 2009f. Scientific Opinion on the impact of housing, nutrition and feeding, management and genetic selection on behavioural problems in dairy cows. Scientific Opinion of the Panel on Animal Health and Animal Welfare. *The EFSA Journal* (2009) 1139, 1-66.
- EU, 1997. European Commission. Treaty of Amsterdam - Protocol on protection and welfare of animals. *Official Journal C 340, 10/11/1997*, p. 110.
- Keeling, L. and Veissier, I., 2005. Developing a monitoring system to assess welfare quality in cattle, pigs and chickens. In: A. Butterworth (Ed.) *Science and society improving animal welfare*. Welfare Quality conference proceedings 17/18 November 2005, Brussels, Belgium, 46-50.
- Müller-Graf C., Candiani C., Barbieri S., Ribó O., Afonso A., Aiassa E., Have P., Correia S., De Massis F., Grudnik T., Serratoso J., 2008. Risk assessment in animal welfare – EFSA approach. *AATEX 14, Special Issue, March 31, 789-794*.
- OIE, 2004a. Handbook on Import Risk Analysis for Animals and Animal Products. Volume 1. Introduction and qualitative risk analysis. pp. 57.