

Local and Global Considerations in Animal Agriculture: The Big Picture

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Future Trends in Animal Agriculture

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PREFACE

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The Future Trends in Animal Agriculture (FTAA) organization is an informal committee, Co-ordinated by David Brubaker, Agri-Business Consultant, Michael Appleby, Humane Society of the United States, Ken Klippen, United Egg Producers, and Richard Reynnells, United States Department of Agriculture (USDA), Cooperative State Research, Education and Extension Service (CSREES), Plant and Animal Systems (PAS). The FTAA organizing committee is comprised of representatives from several animal welfare and industry organizations, universities, USDA, and others (e.g., consumers). These individuals represent moderate views on animal production and the desire to work together to bring about positive benefits to animal agriculture and society.

The FTAA has provided a series of educational meetings dealing with current and emerging animal well-being issues and concerns. Animal well-being and production may be associated with: questions of ethics, environmental issues, food safety and other public health concerns, consumer demands, need for regulations, rural infrastructure considerations, etc. These examples are thought by some to be simply directly and negatively related to today's intensive confinement commercial agriculture, while others recognize a greater complexity of these issues. This greater complexity demands more than a simplistic regulatory approach to dealing effectively with these interconnected issues.

The purpose of this symposium is to present the perspectives of persons in international, advocacy and industry organizations, and others, on current societal trends and concerns associated with animal production and marketing at the local level and in a global setting. Presentations include discussions on: the ability of small or medium size farms (often backyard enterprises, not economically viable as a sole source of income) to survive in this global economy; various perspectives on the humane treatment of animals; why effective communications are important to animal agriculture; and, views on how we might better understand the relationship between European and USA research and standards. Presentations will stimulate audience discussion and help staffers, policy makers, and the public to have a clearer understanding of the issues.

The program includes speaker contact information, and is provided as Appendix A. The primary audience members are: agency decision makers and other personnel, animal advocacy organization personnel, professional and agricultural industry representatives, and congressional staffers. The public is welcome to attend all FTAA events.

Solutions to welfare and rights issues in large part revolve around whether or not to regulate the production of animals used for food or food products...and if so, to what extent. Some in the animal rights community tell the world they are primarily interested in animal welfare and downplay their ultimate goal of the elimination of all animal use (exploitation). Therefore, they would be expected to favor regulations that can be modified over time to suit their goal. Protectionists have the goal of animal welfare and many see regulations as a means to ensure that their visions of welfare are enforced. Many animal producers, who practice good stewardship within the economic and other confines of societal demands, would undoubtedly see regulations as excessive, unnecessary, and perhaps the embodiment of “intellectual specieism”.

Specieism is generally defined (as popularized by Peter Singer) as a prejudicial or biased attitude toward the interests of members of one’s own species against those of members of other species (e.g., use of animals for work or food). I have defined “intellectual specieism” as the forcing of the religious or philosophical beliefs of a few on the rest of society. This prejudice or bias for a person’s or group’s viewpoint, philosophy, or religion, which is often presented through positional bargaining or with “the ends justify any means” attitude. Also, there appears to be little regard for an objective analysis of reality or respect for the views of others, and is thus “intellectual specieism”. This would seem a more egregious form of specieism. It is worth noting that regulations regarding animal care already exist, and we have “voluntary” compliance with food animal management guidelines and related certification programs. It may be worthwhile for society, versus special interest groups, to consider when formal regulations make sense, and when market forces should dictate the nature of the animal industries and the food distribution system.

We should all recognize a personal potential for bias. We also should attempt to set aside egos, closely held philosophies, what peers, television stars or other influence peddlers tell us to think, or is trendy, in favor of the truth. A search for truth often leads to a balanced and holistic approach to issues because the many factors that influence a situation or system are considered. Such a search also should lead to an abhorrence of “intellectual specieism”, and result in a respect for other’s opinions, with recognition you may not have all the answers and

that there may be several acceptable or good answers. The latter may be especially true given the constraints imposed by society.

It should be understood there is a low probability that society can have it both ways. That is, it does not seem feasible to expect an extensive confinement system to provide the same advantages to society as intensive confinement animal production. While advantages to some people exist, it is important to recognize there are also many distinct disadvantages of highly competitive intensive confinement facilities (e.g., loss of smaller family farms, loss of rural and agricultural support infrastructures, management systems are seen as cruel by many in society, subsidized food costs, rural to rural and rural to urban conflicts, food safety concerns, and the potential for concentrated environmental contamination). The current system demands, many of which are required to compete globally, include: cheap food that is consistently safe, convenient, and of high quality and uniform appearance; products are provided in sufficient quantity for single shipments to huge purchasers such as fast food restaurants or bulk food outlets; food is provided in a variety of forms and packages; and, food products are abundant to the point animal related exports are important to our economy. The extensive system demanded by some may also be expected to: have efficiencies comparable to intensive confinement facilities; minimize the severity and health concerns associated with manual labor; use a low amount of labor (often an availability issue); and have a high level of protection, health and nutrition of the animals. To one having grown up on, and been a partner in, a diversified extensive farm it appears that meeting these multiple demands for our entire food supply and for export is unlikely. Niche markets exist to meet these demands for extensive confinement production facilities to the extent there are consistent consumer demands in the marketplace.

This search for truth also may lead to a recognition that we all contribute to (and have a responsibility for) our current agricultural system, through the demands stated above. The search may also result in the recognition that respect for life, good stewardship and dominion (as defined in the Bible, not the animal rights led interpretation of equating dominion with abuse), will require a balanced and responsible approach to animal husbandry.

This search for truth and understanding is one reason we are here today. We have several experts who have provided exceptional papers. You may wish to use ideas in these presentations to consider the validity of your current beliefs as to how we should interact with animals, and each other, and how best to accept personal responsibility for creating changes in our agricultural system if, in your opinion, change is warranted. Each of us should consider comments in these papers as an opportunity to honestly evaluate current situations of animal management or use, and an opportunity for interaction to improve our understanding of the complexity of our food production system and related supporting infrastructure. With that understanding, we may move toward collaboration (a higher form of cooperation) to improve the well-being of animals, farmers, and the rural infrastructure.

We hope that you find the proceedings enjoyable and educational. Feel free to contact any committee member for details of future programs. Contact me for additional copies of the proceedings from this or previous years.

The **Mission** of the FTAA is to foster and enhance balanced and enlightened public dialogue on topics related to the nature and future of animal agriculture.

The **Vision** is: to develop programs that are inclusive and national in scope, with the committee consisting of individuals from organizations representing academia, agribusiness, animal welfare, environment, university, government and others. The FTAA seeks to present timely issues in a balanced, innovative and thoughtful manner. The Committee also seeks to enhance public dialogue and understanding about the nature and future direction of animal agriculture, and the impact of their personal decisions on this process.

FTAA **Goals** are: 1. To facilitate genuine collaboration and the ability of farmers to produce food for society, while improving animal well-being. 2. To provide opportunities for dialogue and understanding of animal well-being, environmental and other issues in an atmosphere of mutual respect of consumers, farmers, advocates, commodity organizations, and others. 3. To provide information to identify critical animal production issues and enhance greater understanding of societal desires and trends that impact production agriculture.

Welcome

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On behalf of the organizing committee for the Future Trends in Animal Agriculture, I welcome you to the 2004 symposium, "Local and Global Considerations in Animal Agriculture: The Big Picture". We will look at some overall concepts related to animal well-being and local or international issues. These topics include the current state of competition, and the impact of society and infrastructure on the ability of small and medium size farms to compete.

The need for everyone to understand animal welfare issues is clear, but they have been complicated by the numerous animal welfare and rights philosophies. Considerable information and misinformation of these concepts are provided through their usage in the vernacular, and as such are given wide media exposure (e.g., the equivalent usage of the terms animal welfare, well-being and rights). Semantics often confuse issues, which leaves most people incapable of properly evaluating information. One function of the presentations today is to help clarify these terms. The overview presentation will be followed by discussions of the perceptions of these terms by academia and various interest groups.

The final speakers will discuss our attempts to utilize science as the basis for management decisions and how USA research compares with that in Europe. There is a need for an understanding of scientific reports from Europe and their applicability to USA production methods, and the acceptance and use of USA reports in decision making for European producers.

Please remember to fill out your evaluation form. We require your ideas to improve programs in the future. If you want additional copies of the proceedings from this year or from previous years, please call me at 202.401.5352.

The organizing committee gratefully acknowledges financial support from the Cooperative State Research, Education and Extension Service, Plant and Animal Systems, that allowed the symposium to take place; the Humane Society of the United States for their contribution of the continuous coffee break; and the Animal Agriculture Alliance for duplicating the audiotapes and making them available to interested persons. We also acknowledge the contributions of speakers who paid their expenses in order to participate in this educational meeting, and all speakers for their significant time and effort. All of these inputs facilitated our ability to provide this important opportunity for improved networking and understanding.

Our first speaker is Mr. James Moseley, Deputy Secretary of Agriculture. Before this assignment, Mr. Moseley held several positions of importance, the most significant of which is that he is a grain and hog farmer from Indiana. He has generously agreed to spend a few moments introducing the topic for today.

Trade and Growth of Animal Agriculture in the World

Overview: Social and Global Trends in Meat Production

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Over the next decades, the global meat sector will undergo major changes in demand and supply patterns, production systems, distribution channels, and consumer behavior. If left unchecked, some of these changes could have significant social, environmental, public health and animal welfare impacts. This presentation will provide a summary overview of those developments.

Changing demand patterns

While it is expected that over the medium term, the demand for meat products in the developed world will remain practically stable, the demand for livestock products, particularly in the developing world is expected to rise quite dramatically. Conservative estimates (Delgado et al., 1999) show that demand for milk and meat in the developing world will grow by about 55 percent till 2020. The major share of this increased demand will be met with products from the developing world, as the same projections show that 95 percent of the growth in the demand for meat and 80 percent of the increased demand for milk will be produced in the developing world. This will change global production patterns. By 2020, the share of the developing world in global meat production is expected to grow to 65 percent, compared with 36% in the eighties. These extraordinary changes in the global meat markets have been called the 'Livestock Revolution'.

Changing production systems

This growing demand will cause a significant shift towards more intensive production systems in the developing world, and farm size can be expected to continue to grow in the developed world. Over the 1985-1995 period, meat production from industrial enterprises in the developing world grew by 4.5 percent, whilst mixed farming grew by only 2 percent, and meat produced from grazing systems by less than 1 percent (de Haan et al, 1997). While in many countries, smallholder and family farms are still the mainstay of agriculture, intensive farming methods on much larger farms, is strongly emerging in countries such as Brazil, the Philippines, and Thailand (Delgado and Narrod, 2004). The same increase in farm size has occurred in the developed world, in particular for pigs and poultry.

Changing global trade patterns

From 1991-2001 export of meat from developing countries increased from about 3 to 6 million tons. This figure was slightly surpassed by imports, which grew over the same period from 3.1 million tons to 6.8 million tons. Brazil demonstrated a particular strong growth, moving on the basis of new land clearance and improved efficiency from 460,000 tons in 1998 to 1.37 million tons in 2003. In the same time, the exports of the developed countries surged from 12.4 million to over 20 million tons (FAO, 2003). This doubling of the global meat trade has greatly increased the importance of sanitary conditions in exporting countries, and generally has made the meat sector riskier, as shown by the recent disease outbreaks in the UK, Canada, and Thailand, which caused large macro-economic losses as well as major hardship at the smallholder level.

Changing distribution channels

At the same time, there has been a major concentration in the processing and marketing channels. Vertical integrators and supermarkets, which are common in the industrial world, now start to dominate also in the developing world. For example, led by the supermarkets, the market for premium and mid-value beef is growing faster than any other segment of the market in China (Brown and Walden, 2003). In Brazil, supermarkets doubled their share of milk over the last 10 years. Those supermarkets want a reliable supply of a safe and uniform product, provided by the large integrated production chains.

Changing Consumer Preferences

In parallel, we see that the role of the consumers is greatly increasing. With the many food scares of the past decade, the consumer wants safe food, produced in an environmentally safe, and animal welfare friendly fashion. The key question is the extent that they want to pay for it. Experience so far, however, indicates that organic and animal welfare friendly products remain niche market products. Even in strong health conscious countries, such as Germany, organic beef only has a 2.5 percent market share, in spite of a strong government support program. Animal welfare standards are increasingly being integrated in the national and regional regulatory frameworks, and the World Animal Health Organization (OIE) is now designing international standards. Their focus, however, is mainly on transport and housing conditions of intensive production systems, whilst animal suffering caused by natural disasters (drought, ice

storms) in the developing world seems completely outside the international animal welfare focus.

Changing policy environments

Finally, the international trade policy environment is changing, as tariffs and quota systems are being gradually dismantled, and, in particular in Europe, “beef mountain” causing production subsidies are increasingly being replaced by income subsidies. The phasing out of subsidies will provide new opportunities for developing countries to enter more lucrative markets, although sanitary standards, such as Foot and Mouth Disease and BSE will still present major—and legitimate—barriers. In addition, there is a major concern in the developing world that additional standards, such as environmental and animal welfare standards will be imposed with the—hidden—justification of protecting inefficient domestic industries.

Some policy recommendations for the future.

Environmentally sustainable, safe, and animal welfare friendly meat production is a policy objective of most governments, although the level of priority given to this objective differs between countries, according to, among others, their level of development, culture, and the advocacy strength of their industry and consumer groups. Some key elements of public policy to further those objectives are:

1. Internalize to a much larger extent the environmental externalities in the cost of the product. The “polluter pays” should be the mainstay of sustainable livestock production. Recent research in Brazil, the Philippines, and Thailand shows that intensive production pollutes more per kg product than smallholder producers, and internalization of those costs should shift the emphasis to environmental and animal welfare friendlier family farms, although the difference is not enough to completely “tip the balance”.
2. Redirect the bulk of the current subsidies away from promoting increased production and export subsidies, to the payment for public goods, such as environmental and landscape services, animal welfare, etc.;
3. Redirect public funded research away from increased production to increased sustainability, and efficiency; and
4. Increase public awareness for environmental and animal welfare issues related to intensive animal production, although managing the demand side of livestock products will, as has been the case in other commodities, not be very effective.

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Trade and Growth of Animal Agriculture in the World

International Competition: The China Model

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Introduction

China, which already both produces and consumes 25% of the world's meat, is facing the complex dilemma of meeting the heightened demands for animal protein from its increasingly urbanized and affluent population, while simultaneously grappling with an environmental crisis so severe that it threatens the country's future. China has about 20% of the world's population, but only about 7% of the world's arable land. It has more than reached its environmental carrying-capacity, and one might say that its environmental debt is growing daily. The country is now faced with the challenging prospect of increasing the productivity of its animal agriculture, while simultaneously significantly *reducing* the level of pollution from this activity. To keep the Chinese economy growing while improving the quality and availability of water, for example, will require innovation, creativity, and structural change within the ministries of the Chinese government. The solutions to these problems will require interdisciplinary thinking, and a willingness to change present practices. Chinese leaders are well aware what needs to be done, and are attempting the difficult balancing act of fostering systemic change and scientific progress while maintaining social stability.

The problems facing Chinese animal agriculture are as seemingly intractable as they are interrelated. Where will the water be found to produce animals or for the ever increasing personal and industrial use? Can hundreds of millions of small farmers be productively kept on their land, or will the migration to mega-cities such as Beijing and Shanghai continue? Can social cohesion be maintained in the face of growing consumer expectations and a dangerously deteriorating environment? How can growing income disparities between urbanites and rural farmers be mitigated? Can government act nimbly enough to meet the need for organizational change brought about by international competition and escalating domestic evolution? Is China's historic desire for food self-sufficiency realistic in 2004?

Animal Agriculture

The scope of Chinese animal production is staggering. In 1999, it produced 40.05 million metric tons of pork, and it is home to half of the world's swine population. It also produced 11.15 million tons of poultry meat and 23.15 million metric tons of eggs during that year. Concomitantly, according to the Chinese Academy of Agricultural Sciences, it discharged 2.7 billion tons of animal manure, with relative little used in an agronomically-sound manner. Along with rapid gains in animal production have come larger facilities and more copious, and geographically-concentrated, quantities of waste. About 85% of farm animal production in China comes from small farms and backyard enterprises, although this number is shrinking. About 14,000 larger animal production facilities now exist, and about 80% of these are concentrated near Beijing, Shanghai, and other large cities in east China, with a great many built through joint venture arrangements with foreign corporations.

There is little doubt that over the next decade animal numbers will dramatically rise in China. Although newer facilities will be held to more rigorous environmental standards, it should be noted that about 90% of the existing animal farms were built with essentially no environmental standards, and that 60% of existing operations still lack even basic environmental safeguards. With so many animals located so close to very large cities, the public health threats from variant forms of influenza and increasingly-virulent strains of bacteria, are quite real.

In ten years China is apt to house 60% of the world's pigs, with lesser, but significant increases of other animal species. Like the United States, pressure to convert farmland to other uses is intense, and the loss of acreage, coupled with the increase in animal production, means that feed grain production has fallen, and imports of wheat, soy, and rice have increased and are expected to continue to do so indefinitely. In essence, China has made the decision to exchange grain production for meat production. In order to maximize productivity, the government has encouraged the consumption of chicken and beef. The former because of its better feed efficiency, the latter because beef cattle are able to use non-grain feed resources.

Some Observations

It is easy to be pessimistic about China's prospects for sustainably developing its agricultural industry. Increasingly, desertification in the distant west has led to sandstorms in Beijing, and farmers in some eastern provinces are having difficulty obtaining sufficient water. Massive water diversion projects have dislocated entire communities, while the water table continues to fall and river beds are dry. Disease outbreaks among animals and people are more common than many want to admit, and middle class, urban, Chinese are showing a growing fondness for McDonald's. Obesity, rare until recently, is increasing rapidly. There is a vicious spiral of consumption-production-environmental degradation, and it seems to be getting worse, usually seen as the price of growth.

Can China, with its massive size, and its massive problems, find a way to develop a larger but more benign animal industry? I am encouraged that they can. I am encouraged that Chinese leaders understand the nature and severity of the problem, and they are taking action. Some of the policies of the Ministry of Science and Technology are as visionary and original as will be found anywhere in the world. The Chinese may be ahead of the United States in recognizing the depth of the problems presented by animal agriculture, and their recognition of its role in global climate change through greenhouse gas emissions has led to an impressive research agenda to monitor China's contribution to the problem, and to find solutions.

Because there is no choice, China is embarking on a program fostering innovation and imagination, and has given the issue of pollution from animal production a much greater level of importance than in the United States: They have made it a major national priority. China seems receptive to new ideas, and conditions there present a once-in-a-lifetime opportunity to test new ideas, ways of thinking, products, and systems.

China is seeking to develop a wide variety of new technologies, to foster what it calls "green food" production, and to take waste, in this case animal waste, and turn it into value-added products. For example, hog waste can be composted and the compost can be used to enrich depleted soils or to grow trees.

In the short term, China will need to find ways to produce animals using less water and to transform waste into useable products. Animal production will have to become more energy-efficient, and it will have to treat animals more humanely. Over the longer term, it will evolve in ways that we cannot surmise – but it will evolve. The present goal of the Chinese government is to make China's animal agriculture a model for the world. Yes, it has a long way to go. However, the Chinese have shown their ability to make major changes in relatively short periods of time. In a country of 1.3 billion people, the ingenuity and intelligence exists to develop a truly sustainable agriculture.

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Trade and Growth of Animal Agriculture in the World
**Local or International Food Sources: Energy and Agriculture and
a Call for Greater Scrutiny**

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One facet of the overall topic of trade and growth of animal agriculture in the world is that of whether to favor “local or international food sources.” This sub-topic, too, can be explored in a number of ways, and this paper does so from the standpoint of energy. Energy is an issue that cuts across agriculture and modern society affecting essentially everything we do.

The question of what balance should be struck between international versus local food sources is inexorably tied to the questions of energy policy and practices, especially with regards to fossil fuels. Examined in this paper are some of the ways energy is used in modern agriculture and some consequences of agriculture’s dependence on large energy inputs for transportation, on-farm needs (diesel, gasoline, fertilizer, etc.) and processing. Further, it is urged that much greater levels of thought, research and action be directed towards the role of energy use in agriculture, and suggests the goal of minimizing inputs of fossil fuels.

Many years ago, I attended a conference at which one of the speakers dealt with international trade. He had recently been in Denmark and was surprised to find that the “Danish Butter Cookies” in a store there were made in the United States. Upon returning to the United States, he found Danish Butter Cookies in his local grocery store as well. They were made in Denmark. He posed the question: ‘Do we really have to spend all of that energy shipping these products across the ocean? Couldn’t we just trade recipes?’

This is a legitimate question, for it *does* take large amounts of energy to ship agricultural products around the globe, and sometimes this amounts to simply trading similar or identical products. A 1997 survey of agricultural trade in the United Kingdom, for instance, found that the country exported 270 million liters of milk and imported 127 million liters in the very same year (1). Agricultural transportation offers us a window into the role of energy use in agriculture and suggests the importance of greater scrutiny of this relationship.

Overall statistics on energy use in agricultural transportation are difficult to compile because they are kept by a vast array of organizations and companies. However, even the most cursory examination shows that agricultural transportation makes up a very significant portion of America’s overall demand for energy.

Agriculture accounts for one third of all freight transport services in the United States. (This includes raw agricultural commodities (including timber), processed products and agricultural inputs such as fertilizer, pesticides and farm machinery.) Trucks carry 45% of all agricultural goods, followed by railroads (32%) and barges (12%). Farm consolidation has added to the demand for agricultural transportation because of greater production as well as greater distances between sites of production and use. For example “expansion in cattle feeding in regions outside the major feed-grain producing states creates additional demand for grain transportation” (2).

A 1999 University of Wisconsin study estimated that of the energy used in the United States for the production and distribution of food, 17.5% was used on the farm, 28.1% on processing, and 20% on distribution and transportation (the remaining amount is used for preparation of food in restaurants and homes) (3). In 2002, approximately 1.7 quadrillion British Thermal Units (BTU’s) of energy were used on U.S. farms and this represented 1.7% *of all energy use in the country* (4). Thus, it can be estimated that when transportation and processing are included, the agricultural system consumes almost 5% of all energy used in the U.S.

Not only does agriculture consume large amounts of energy, the rate of increase in transportation (and therefore energy use) has risen out of proportion to other factors. Between 1968 and 1998, world food production increased 84%, population increased 91% and food trade increased by 184% (5). The rate of increase in food trade and in the energy consumption necessary to drive it continues to rise in this era of globalized markets. A U.S. Department of Agriculture (USDA) paper (2) notes that “While much of the transportation infrastructure in the United States is becoming antiquated, our international competitors are improving their infrastructure and, consequently, their competitiveness in world markets. . . . As the predominant users of transportation services in the nation, the prosperity of U.S. agricultural producers depends, in large part, on the future of our transportation system.”

At a conference sponsored by the USDA on the subject of agriculture and energy (June 24-25, 2004), Secretary of Agriculture, Ann Veneman stated that energy security underlies our national security and that we are in a critical time for understanding energy and agriculture. This sentiment is being voiced by increasing numbers of people. The remainder of this paper lists and briefly discusses a number of reasons that energy use should be scrutinized to a greater degree.

Some reasons for greater scrutiny of energy use in agriculture

1) Energy is an important part of the budget of most modern farms. Farmers should be concerned about energy issues if for no other reason than the fact that energy is a major operating expense. On average, about 3.3% of all farm expenses are for direct energy uses (diesel, gasoline, electricity) and another 9.2% are for fertilizers, pesticides and other indirect energy uses (6). Some farm operations, of course, are much more energy intensive than others. Rice, corn, cotton and peanuts are among the most energy intensive crops while soybeans are one of the least energy intensive. In animal agriculture, beef cattle are on the high end and hogs on the low end of energy use (while both exceed the energy use of plant agriculture).

The recent energy crisis in California illustrated the tremendous impact that energy costs can have on agriculture. During 2000 and 2001 when energy costs increased sharply in that state, the Agricultural Energy Consumers Association in California published a paper entitled "Agriculture's Energy Crisis." Forty-six businesses, associations and other organizations representing all the major agricultural interests in California signed on to this paper and stated that "The extent to which life and commerce can flourish anywhere in the world hinges on the affordable supply of three necessities – water, energy and food. Each of these vital components is inextricably linked in California's complex economy, and each is currently threatened." Among the many recommendations made in this paper were the declaration of a statewide fuel emergency and the expediting of energy conservation and alternative fuel sources.

A recent *Washington Post* article on energy independence also noted the close link between energy and the success of farmers. With regards to the recent rise in energy prices, Ed Theis, a farmer from Leavenworth, Kansas said that "the prices are so high for foreign fuel that as farmers the price we pay for fuel is killing us – we can't survive" (7). Much closer attention should be paid to energy if for no other reason than it is crucial to the financial well-being of farmers.

2) Food Security. According to John Miranowski, short term energy costs greatly affect farm success and food prices. The silver lining of high prices, however, is that higher energy costs can spur efficiencies that result in better practices. (A myriad of energy-saving practices became widespread in response to rising fuel costs in the 1970s and 1980s.) Thus, more than high energy prices (save for sudden and marked price spikes), Miranowski is concerned about energy disruptions during critical periods such as harvest, planting or climate control periods for housed animals. Energy shortages could also greatly affect the transport of agricultural products as well as farm inputs such as fertilizer. A shortage or outright disruption of fuel or

electricity during such critical periods could result in major farm failures and/or food shortages (8).

One area of increasing concern for U.S. food security is the increasing dependence on the Middle East for nitrogen fertilizers – the production of which relies heavily on natural gas. The application of inorganic fertilizer (especially nitrogen fertilizer) is one of the most important elements of modern farming. On all “conventional” (non-organic) farms, viable crop yields (including those used for animal feed) are largely dependent on nitrogen fertilizers. (This is the primary factor that makes conventional corn 50% more energy intensive to produce than organic corn). During the past six years (1998 – 2004), U.S. imports of ammonia and urea – the most widely used nitrogen fertilizers – have increased from 20% to 40%. This is largely due to the fact that as much as 95% of the cost of producing these fertilizers is in the cost of natural gas, and this fuel is much cheaper in many other countries. Much of the increase in foreign supply of nitrogen fertilizers has come from the Middle East (9).

3) Soil health. Our dependence on other countries for fertilizer is not the only security concern related to current levels of fertilizer use. The dependence on inorganic, fossil-fuel-based fertilizers also affects soil health. The following selection from “The Oil We Eat” by Richard Manning (Harpers magazine, 2004) gives a perspective on the modern agriculture’s dependence on inorganic fertilizers:

When we say the soil is rich, it is not a metaphor. It is as rich in energy as an oil well. A prairie converts that energy to flowers and roots and stems, which in turn pass back into the ground as dead organic matter. The layers of topsoil build up into a rich repository of energy, a bank. A farm field appropriates that energy, puts it into seeds we can eat.”

Modern agriculture, in essence, mines the energy present in soil organic matter and then replaces this loss with fertilizers created by fossil fuels that are mined in other locations. Depleted soil fertility must be compensated with external fertilizers of high (and increasing) energy and monetary value. Studies at the Rodale Institute indicate that organic farming results in 16-28% increases in soil carbon and 8-15% increases in soil nitrogen over conventional farming methods (10).

Soil fertility is not limited just to loss of organic matter, however. A Virginia Tech study, for instance, showed that historically organic farms had higher levels of beneficial soil fungal species than conventional farms and historically conventional farms treated with organic fertilizers showed increasing levels of beneficial fungi (that help plants absorb nutrients) with time (11). The Rodale Institute has shown, in fact, that significant increases in crop yield can result (20-30% for peppers and 20-50% for potatoes, for instance) when soil is inoculated with beneficial fungi, suggesting an alternative to large fertilizer inputs (12).

Another concern associated with a long-term dependence on large energy inputs is a loss of knowledge and experience of how to farm without them. A Kansas State University paper by Lisa French, entitled “Soil Management: A Summary from KSU Circulars and Bulletins from 1899 to 1965,” shows a sudden shift in research and publications about soil management after inorganic fertilizer use became prevalent. Prior to the mid-1900’s when inexpensive nitrogen fertilizers became available, French notes that almost every soils publication dealt with five

factors: depletion of soil organic matter, failure to grow enough leguminous plants for nitrogen fixation, depletion of mineral nutrients, the lack of proper crop rotation and the erosion of topsoil. After the mid-1900's, the emphasis was on application rates of fertilizers, and French surmised that "inexpensive commercial fertilizers have precluded the need to monitor nutrient cycling on the farm" (13).

French concludes her paper with the hope that "Farmers may gain understanding from the early research of Kansas State University and then begin to ask the questions that will lead us into the twenty-first century with renewed interest in our soil".

4) Social costs. Rising costs (including those for energy, as noted above) and unpredictable income have eaten away at already narrow profit margins for American farmers. With this has come a tendency for farming operations to become larger and more "monocultural." Overall, the system necessitates maximum production at lowest costs, and large energy inputs enable these large economies of scale. Much has been written about the effect that this trend has had on farming communities. One social change that has occurred over the past several decades, for instance, is that young people have moved out of farming communities.

Third generation farmer, Joel Salatin, laments that "We can talk all day about the environment and clean food, but if our farms are not fun, not profitable, or too much work – our children won't want them and we're spitting in the wind. Romancing the next generation is the ultimate test of sustainability" (14). Late British economist, E. F. Schumacher gave a similar perspective on this phenomenon during a speech he delivered on the scale of modern industry. Asked to comment on the economy of farmlands near Toronto, Canada, he noted that as farming became larger and more one-dimensional, communities were no longer challenging and stimulating to the human soul. He characterized this trend in the pithy statement: 'Wheat, wheat, wheat . . . nothing but wheat, and life becomes intolerably dull.'

Salatin urges (and practices) the use of creative, linked systems that make farming a human-scale venture that involves all ages – especially teenagers – and reduces off-farm inputs such as fossil fuels and fertilizers. Schumacher devoted his life to the development of "mid-sized technologies" in all areas of life that are more suited to the interests and well-being of people and land than are large-scale systems. These and many other models exist that consciously reduce energy inputs and the scale of farming operations to ensure that farming remains a challenging, interesting and nourishing profession.

Obesity is another social cost associated with large-scale production of food enabled by large energy inputs. Despite food shortages in many areas of the world, food is cheaper and more abundant for U.S. consumers than ever before. In recent years, the national trend in restaurants, for example, has been towards "super-sized" meals. Because such a small percentage of running most restaurants is in the cost of food, it is profitable to lure customers with larger and larger servings so long as the customers respond. And respond they do. As noted by Richard Manning in "The Oil We Eat," (Harpers magazine, 2004), "Much of the energy moves from the earth to the rings of fat around our necks and waists."

According to *Time Magazine* ("How We Grew So Big." June 7, 2004), "Over the past century especially, technology has almost completely removed exercise from the day-to-day lives of most Americans. At the same time it has filled supermarket shelves with cheap, mass-

produced, good-tasting food. . .” Much of the energy that Americans used to expend digging, plowing and weeding has been supplanted by fossil fuels.

The *Time Magazine* article makes a direct (albeit unacknowledged) connection between obesity and energy use in its discussion of the “corn connection.” The opening line of this section reads “The U.S. produces so much corn so cheaply that Americans have become quite clever at inventing uses for it, from fuel to power cars and trucks to the polymers in plastics. But most of all, we eat it.” Corn is hugely productive so long as it is well-fertilized, especially with nitrogen fertilizer. For the time being, nitrogen fertilization is still relatively inexpensive in monetary terms, but it is expensive in terms of energy.

Perhaps the National Obesity Prevention Conference (to be held October 25-27, 2004, and sponsored by the USDA) will entertain discussion about some of the ties between agricultural energy policy and obesity. This issue and other social concerns warrant greater scrutiny of the role that energy use plays in our lives.

5) Environmental costs. In addition to the problems associated with soil health and erosion discussed above, there are many other environmental costs and concerns associated with modern, energy-intensive farming. These include spills of petroleum products, sickness and occasionally death from pesticides, and many others. All of these call for a much closer look at agricultural energy policy. But there is still another reason to do so. One of the most controversial environmental costs of a fossil-fuel intensive economy, and thus modern agricultural systems, is global warming and climate change. More and more scientists agree that global warming is a real result of increases in human-generated greenhouse gas emissions (especially carbon dioxide, methane, and nitrous oxides) and that it will have anywhere from moderate to extremely serious negative consequences. Recently, even Shell Oil Company chairman, Ron Oxburgh, has stated that he believes that global warming will have extremely serious consequences and that it is imperative that methods of carbon-sequestration be developed at once (15). One of the potential consequences of global warming is the reduction of arable lands in many areas, including the American Midwest.

The agriculture industry not only has the potential to reduce greenhouse gas emissions in the first place (through energy conservation and the development of alternative energy sources), it also can contribute to the formation of effective “carbon sinks” such as cover cropping. There are currently a few examples of the agricultural industry actively addressing these issues. For example, the Consortium for Agricultural Soils Mitigation of Greenhouse Gasses (CASMGs) is actively exploring ways in which farmers and other citizens can both reduce greenhouse gas emissions and create carbon sinks (16). Long-term studies at the Rodale Institute show that soils on organic farms are more effective than conventionally farmed soils in trapping atmospheric carbon dioxide and converting it to soil material (17). In addition, many farms – especially in the mid-west and other areas of high winds – are discovering the benefit of installing windmills for generation of electricity. These wind farms help to reduce greenhouse gas emissions.

The risks/dangers of global warming alone – even though its exact ramifications are not entirely clear – are reason enough to at least test methods of reducing energy use in our society. This is no less true for the agricultural system, for it is a part of the problem but also has tremendous potential for being part of the solution.

6) National security – the United States' dependence on oil and natural gas from foreign sources is a major contributor to tensions world-wide. Although opinions vary on whether or not our country should have gone to war in Iraq, for instance, opinions about the role of oil are much more unanimous. There are few people who would argue that our dependence on Middle Eastern oil does not greatly exacerbate our problems there, and fewer still that think that oil had *nothing* to do with our decision to go to war.

In a speech in October 2001, David Garman, an Assistant Secretary of the U.S. Department of Energy, said that our reliance on oil from the Middle East (which included about \$6 Billion in imports from Iraq annually at the time) complicates all of our actions there, including those in the aftermath of the terrorist attacks of September 11. This sentiment has gained almost universal understanding and support. During the current presidential contest, all candidates are claiming that it is important to reduce America's dependency on foreign oil. Even if the reasons for making this statement and the solutions offered are very different, this widely held value of reducing reliance on foreign oil strongly suggests that the issue of energy use deserves much greater levels of debate and discussion. Reducing our nation's need for oil and other fossil fuels is a feasible and deserving goal, especially when there are so many other reasons besides national security to do so.

Conclusion

Since World War II, American agriculture has become hugely productive. American farmers produce more nutritious food per capita than anywhere else on Earth. Nonetheless, there are many signs and trends that point to serious consequences if we continue down the path of energy-intensive agriculture – both for agriculture and for our society in general. There is a need and opportunity for significantly greater levels of debate and discussion about energy conservation, alternative energy sources, and alternative farming methods at all levels - including government, academia and among farmers themselves. Each one of the areas of concern discussed in this paper point to the need for such dialogue; taken together, they cannot be ignored.

Evidence from many fronts, ranging from environmental to national security, points to the conclusion that all sectors of the U.S. economy - agriculture included – should strive to reduce overall energy, especially fossil fuel use. Thus, when it comes to the question of favoring “local or international food sources,” it is legitimate to favor the purchase of local foods over those shipped in from faraway (international or otherwise). This is one way, among many, to help reduce energy use in the agricultural system. Consumers, producers, processors and transporters all have important roles to play in this important endeavor.

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Farm Types and Production Systems: Can Small and Medium Sized Farms Survive?

Niche Market Perspective

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Introduction

With this paper, it seems prudent to immediately answer the query posed in the title: “Can small and medium sized farms survive?” Well I *think* that the answer is a resounding “YES!” However, describing a strategy or series of strategies for how that is to happen is difficult, challenging, and in contrast to some economic projections and current trends.

My background has undoubtedly affected my perspective on this issue. My early years were spent on a small diversified farm in West Virginia. We also managed an open-air roadside market from early spring through Christmas. We sold some home-raised produce and meats but most retail sales were for products purchased from local producers or at larger markets in OH, eastern WV, MD, and VA. Dad and Mom also worked as a rural mail carrier and substitute carrier, respectively. After education at WVU and UW-Madison, I worked with extension in WI and WV before advanced study at WVU and employment as an extension specialist at N. C. State University in 1986.

Currently, I coordinate a pasture-based dairy production system at the Center for Environmental Farming Systems (CEFS): <http://www.cefs.ncsu.edu/> I am also a participant in a recent Kellogg-funded project involving CEFS to examine alternative strategies for producing and marketing pork. This, of course, is in a state where commercial pork production grew substantially through the 1980's and 1990's via integrator-controlled contracts similar to those used by the poultry industry. The pork industry in NC grew to be the largest outside the corn belt and is second only to Iowa. A legislative moratorium on new lagoon-based swine production was imposed in 1997.

During the past several months, I have been participating as a member of a national task force called the “Agriculture of the Middle” and funded by the W. K. Kellogg Foundation and the USDA’s SARE program: <http://www.agofthemiddle.org/> This initiative seeks to renew or strengthen a disappearing sector of mid-scale farms that are unable to successfully compete by marketing bulk agricultural commodities and are not in a position to easily sell food directly to consumers. It also pertains to independent agri-food enterprises that interact with farmers to serve local communities.

I live in Cary, NC in the “Research Triangle,” an area nationally and internationally recognized for its livability, opportunity, and economic prosperity. Yet, within a 2-hour drive in most any direction, one can find many examples of struggling small towns and agricultural communities.

The objectives of this paper are to: review trends in animal agriculture and agriculture in general; to raise questions about implications of such trends on small and mid-sized farms; and to discuss alternative strategies that might be considered.

Toward Industrialization of Agriculture

Many viewpoints on agriculture don't project long-term viability of small or medium sized farms, (i.e. family farms in the United States). The Federation of Animal Sciences Societies (FASS) sponsored a Food Animal Integrated Research conference, "FAIR 2002," in Baltimore in 1999. One of the speakers, an executive of the "farmer owned" Farmland Industries, Inc. spoke about an agricultural future that likely would have a predetermined market of each genetically engineered crop or animal product before seed was ever planted or animals were ever mated. In such an eventuality, decision making and control of agricultural production is in the hands of very few individuals. In many aspects, the land grant university system has supported movement toward such an industrial agricultural model.

There is ample evidence of movement in that direction. The swine industry has rapidly followed poultry into vertical integration with claims of economic efficiency and quality control. From Smithfield Foods website: "Smithfield Foods produces 12 million hogs and processes 20 million annually, making it the world's largest vertically integrated pork processor. Through its hog raising and pork processing subsidiaries, the company can exercise complete control over its products—from their genetic lines and nutritional regimen to how they are processed, packaged, and delivered to customers." See <http://www.smithfieldfoods.com/Understand/Vertical/>. Smithfield Foods goes on to indicate that vertical integration has helped smooth effects of erratic prices and that tight control over product genetics is creating valuable export opportunities. They also note that "the current regulatory environment would make it difficult for any pork processor to launch a significant hog farming operation from scratch in the United States.

Interestingly, Smithfield Foods actively pursued and purchased Farmland Foods, a subsidiary of financially troubled Farmland Industries earlier in 2004, one of 25 such transactions since 1981 (Palmer, 2004). As a result of those acquisitions, Smithfield Foods has become **the** major player in the pork industry and also has a significant presence in the beef industry.

In his 1998 book, "The End of Agriculture in the American Portfolio," economist Steven C. Blank of UC-Davis portrays a vision of the future indicating that American agriculture not only will consolidate but that it is destined to end. Blank predicts that costs of land and labor in the U.S. will be too high for American farmers to remain competitive globally. However, he claims that current economic trends are a natural process and that pursuit of individual economic self-interest of companies ultimately will be a good thing for society. In defense of that thought, we certainly have succeeded in providing low cost, and reasonably safe food to our citizens based on prices in grocery stores, supermarkets, and as a percentage of income compared to other countries.

Economic considerations are the basis and are most critical in the scenario that Blank argues. Corporate agribusiness is and will continue to replace family farms if economic efficiencies can be gained. Multi-national agricultural corporations in their aim to achieve profits for their stockholders will migrate to other locations to gain economic efficiency. Traditional agricultural commodities have already started to move into other countries via multi national companies.

The “breadbasket” of the Americas is already shifting toward South American production and moderate sized U.S. farmers are finding it harder to compete in traditional commodity crops. Significant growth of agriculture in other countries may boost their local economies in the short run but success in the long term may depend on opportunities to empower local participation and entrepreneurship.

In animal agriculture, internationalization has also begun. Using pork as an example, Smithfield Foods owns interests in processing facilities in Spain, Mexico, France, Poland, and China. Murphy-Brown, a Smithfield subsidiary originating in NC, owns interests in 66,400 sows in Mexico, Brazil, and Poland and those sows currently account for about 8.3% of Smithfield’s world leading 12 million hogs produced per year. Although, this is a relatively small percentage, the infrastructure has started to be in place for more significant growth of swine production external to the United States. The “Pig International Electronic Newsletter” <http://www.wattnet.com/pig/> of August, 2004 reports that “Carroll’s Foods do Brazil,” partner of Smithfield Foods is planning to expand from 12,800 sows to 54,400 sows in Brazil by 2008 along with construction of a processing plant in cooperation with the municipal government of Quissamã.

The dairy industry is also moving steadily toward consolidation. As dairy farms have become fewer and more dispersed in recent years, larger farms have benefitted from relatively lower transportation charges that become disincentives for smaller farms. Fonterra, the consolidated dairy cooperative in NZ, and Dairy Farmers of America (DFA), the largest milk-collecting cooperative in the US, signed a Memorandum of Understanding in July, 2003 to govern their partnership in the years ahead and both cooperatives have connections in other countries. The joint venture employs close to 300 people in several locations across the US with sales expectations of nearly \$300 million in the first year. Customers include Nestle, Frito-Lay, Kraft, Unilever and Mead Johnson.

The Dean Foods Company is an example of a dairy foods company that is making strategic production alliances and vertical integration. Their Dairy Group division is the largest processor and distributor of milk and other dairy products in the country. Through its White Wave and Horizon Organic subsidiaries, Dean Foods is also the nation’s leading manufacturer of soy milk, organic milk and other branded organic foods. Dean Foods and its subsidiaries operate approximately 120 plants in 36 U.S. states, Spain, and the United Kingdom. They employ approximately 29,000 people <http://www.deanfoods.com/>. The movement of Dean Foods into organic dairy production through acquisition of Horizon illustrates that alternative production systems are also subject to the economic model of growth and vertical integration.

Vulnerability?

Many if not most contract growers of poultry and swine would indicate that there have been advantages of their relationships with an integrated production system. Access to market, a chance to keep a family farm economically active, and sharing risks of production are listed as positive aspects. In fact, the existence of such contracts makes it possible for farmers to get loans to build production facilities in contrast to entrepreneurial efforts without existence of contracts. However, such farms then become dependent upon contracts which are usually of short duration, perhaps periods of one year or less. There have been a number of cases where

whole groups of contract growers have been notified that the contract will not be renewed for various reasons.

For example, Pilgrim's Pride Corp. has scheduled to close a turkey processing plant in Virginia's Shenandoah Valley in October, 2004 unless a buyer can be found. If this happens, 1,300 plant workers would lose jobs and 169 farmers in VA and WV would lose their contracts (Higgins, 2004). One producer that I know personally was contemplating converting 3 turkey houses for use in growing broilers in order to be able to secure new contracts. However, the cost would be at least \$100,000 per house for such a conversion and he would still be subject to short term contracts with another integrator. One alternative being explored is forming a cooperative to buy the plant and to continue to grow turkeys. Will they have access to turkeys to stock the houses? Will there be sufficient access to current markets or will new marketing channels need to be developed?

Increasing regulatory pressures put contract growers at risk as well. Because they own the land and the facilities, but not the pigs or poultry, the burden of making adjustments to meet regulations for nutrient management or possibly air quality falls to them rather than to the integrated company. Although Smithfield Foods has contributed \$15 million to fund research to investigate "Environmentally Superior Technologies" for swine production through a 2000 settlement with the NC Attorney General (http://www.cals.ncsu.edu/waste_mgt/2yrreport.pdf), alternatives are likely to cost more and contract producers may have to bear the cost if new technologies are required. Such external pressures likely will increase efforts to relocate animal production systems.

In dairy, projected demand in the U.S. by 2010 is about 190 billion pounds of fluid milk equivalent. This means that as few as 1,520 dairy herds each with 5,000 cows and 25,000 pounds of milk per cow can meet that demand. Such herds (and larger ones) do exist now in some areas of the country. Such a change would result in about one large dairy herd for each 2 counties in the country and would be fewer dairy herds than the 1,938 that were reported on the 2002 Census of Agriculture for Lancaster County, PA (Merrill, 2004). Although a change of such magnitude in 5 years is not likely, relatively recent changes in the structure of both the poultry and swine industries illustrates that significant consolidation is possible if not probable. With fewer farms and larger farms movement into strategic alliances become stepping stones to vertical integration.

Increasingly, world trade negotiations call for elimination of agricultural export subsidies, improvement in market access for farm goods through tariff cuts and quota expansion, and reduction in internal payments of agricultural commodity programs, both in the U.S. and the European Union. If implemented tomorrow without some restraints, free trade would likely accelerate rates of agricultural industrialization and movement of commodity production elsewhere.

Questions Raised?

These trends raise a number of serious questions for the future of agriculture in general and specifically for small and medium sized livestock and dairy farms.

What are the long term sociological and economic impacts of agricultural consolidation on rural communities?

*"Don't it always go to show
You never know what you've got 'til it's gone
They paved paradise,
They put up a parking lot."*

Written by Joni Mitchell circa 1969; recorded by Bob Dylan and others in various renditions.

Thomas Cole (1841-1848), founder of the Hudson River School of landscape painting, might struggle with our departure from Jefferson's vision of an agrarian society. Jefferson in speaking to George Washington in 1787 stated: "*Agriculture... is our wisest pursuit, because it will in the end contribute most to real wealth, good morals and happiness.*"

Okay, I admit that we enjoy low cost food. We enjoy eating fresh fruit out of season or some exotic cheese that comes from other countries. We even invest our monies in multi-national food and agricultural companies and look for high returns on our investments. We enjoy an infrastructure that allows for movement of food across long distances that allows us to feed millions of people in urban environments.

However, do we want those things to the extent that we foster ghost towns all over rural areas of the U.S.; that we continue to tell our family farmers to get bigger or get out; that we say this process is inevitable and only the most efficient will survive? This does not mean that truly inefficient farms should stay in business. Loren Tauer (2001) in an economic analysis of dairy farms in NY, concluded that the efficient small dairy farm can compete with the efficient large dairy farm in costs per unit of production, albeit large farms in that study were about 500 cows rather than 5,000 cows.

Is there a value in having thousands of thinking, doing, working entrepreneurs tending the land and conserving natural resources in contrast to decisions being made nearly exclusively in boardrooms of a few large companies?

Are there issues of monopoly or anti-trust that need to be addressed as companies merge and independent access to the market place is compromised?

Studies of major food and agricultural companies, subsidiaries, and partners reveals many connecting links that indicate the possibility that decision making of individual companies may not always be independent: http://www.nfu.org/images/heffernan_1999.pdf. This site is a report to the National Farmers Union on "Consolidation in the Food and Agriculture System" by Drs. Bill Heffernan, Mary Hendrickson, and Robert Groski of the University of Missouri.

Even farm cooperatives may have issues with possible monopolistic activities. The Chicago Tribune reported on August 12, 2004 that Dairy Farmers of America, the nation's largest dairy cooperative that markets milk for a third of U.S. dairy farmers is under investigation by the anti-trust division of the Justice Department for allegedly trying to corner the raw milk market in several regions of the country.

Do independently owned and managed farms provide for a measure of food security?

Our current food and agricultural system is heavily dependent upon fossil fuels. This includes fuel for farm equipment and production of pesticides and major inputs of transportation from farms to processors, to wholesale distributors, to retail outlets, to consumers. There are varying projections on the length of time that a system based on fossil fuel can continue but all projections are finite. Is there any risk there? Some would claim that with our "American ingenuity," we will solve that problem when the time comes. Is there a need to address such problems well in advance of a crisis by using longer planning horizons than the length of a political term?

The milk marketing system is so convoluted that dairy farmers in the Southeast, a milk deficient region, essentially subsidize the cost of bringing in milk from other states to meet full supply contracts with processing plants. The latest available (April, 2004) mailbox milk prices, the net prices farmers actually get, for the Appalachian and Southeast regions were substantially lower than prices received in milk surplus states such as WI, MN, and CA. Is there an advantage to maintaining locally produced fresh milk that does not have to be shipped 1000 miles or more?

In the event of a bio-terrorist attack on our food system, which would be more secure: control by a few large companies concentrated in a few areas or control by thousands of smaller units? This is really not pleasant to contemplate either way. Larger companies and processing plants may have more routine security measures in place but if those measures are compromised, the consequences could be devastating.

Change in Direction?

John Ikerd, Professor Emeritus of Agricultural Economics at the University of Missouri - Columbia proposes a quite different picture of the future of agriculture. In his on-line book *The Case for Common Sense*, Ikerd (2004) describes his transformation from a "conservative, bottom-line, free-market economist" to an open advocate of a new economics of sustainability. He points out the necessity for fundamental change, even radical change as the subtitle implies: "The New Economic, Ecological, and Social Revolution."

Certainly not all would agree with Ikerd, but there are many other individuals and organizations that share his concerns. Ikerd's questioning of the current system is very serious and should be used as a basis for further investigation. It may be one thing to have only a handful of automobile companies or computer companies but is having our food and agricultural system in the control of a few companies the most desirable approach? However, farmers don't want to be on the farm just to provide green space or as a sacrifice to a nostalgic society. They want what other people want; they want vacations; they want conveniences; they want freedom of choices; they want a fair chance to compete. Are there agricultural economic models that can achieve this?

Within the "Agriculture of the Middle" task force, we are working towards a vision to encourage the creation of economic value chains distinguished by mutual commitment to sustainability, fairness, and food quality. We are looking for strategies and models in which all partners in the

value chain are encouraged to make business decisions that will ensure economic sustainability of all other partners in the chain. These partners include farmers, processors, food distributors, food retailers, and consumers. There is a need for further development of successful case studies and for integrated research efforts on workable models for such value-based chains that can share power and economic returns such that more small and mid-sized farms can compete and provide an economic base for health and wealth of local communities.

Kirschenmann et al. (2003-2004) point out a potential comparative advantage of mid-sized farms in producing unique, highly differentiated products. Food products that reflect both significant scale and product differentiation (e.g., specialty baking flours, higher quality meat products, human food grade soy products, etc.) may be suitable targets for such farms. These are envisioned to be run through regionally-operative value chains that connect mid-scale farmers with buyers from regional food service companies and regional supermarkets that are seeking differentiation from their large national/international competitors.

Rick Schneiders, President and CEO of SYSCO Corp. has expressed concerns about loss of mid-sized farms (Schneiders, 2004). Growing numbers of consumers are interested in a high quality food system, produced by farming methods they can support, and delivered through a value chain that they can trust. Schneiders differentiates production of commodity goods for retail food outlets from a “foodservice industry” and feels that there are real opportunities for mid-sized farms to be involved in production of specialty products for such markets.

At the Center for Environmental Farming Systems in NC, we embrace an ecological and systems approach to agriculture in which methods that ensure the production of food and fiber are coupled with environmental responsibility, and economic, social, and community viability. Our pasture-based dairy is being used to examine economics and environmental consequences of various production options through USDA SARE funding. Pasture-based systems offer potential advantages: lower infrastructure costs for housing and manure handling, less odor, lower feed costs, differing fatty acid composition of milk, possibility of organic production, and more aesthetic value in appearance. However, milk production per cow is often lower. Therefore, balance between economics and realistic environmental goals is needed. For example, increasing stocking rate may provide for higher economic return but nutrient accumulation with higher levels of supplement at high stocking rates is of potential concern.

With our Kellogg swine project in NC, we will be evaluating alternative approaches for swine production. Also, we plan to facilitate building a value chain to connect consumers back to farmers and allow choices of pork products ranging from antibiotic free to organic. We also plan to work through smaller, independent abattoirs and perhaps strengthen their relative competitiveness.

There certainly have been a number of successful examples of entrepreneurial farmers developing their own direct markets, and building mini value chains through direct contact with producers. Community-supported agriculture brings consumers into the loop for sharing some risks. On a larger scale, There have been examples of successful cooperatives that share responsibilities and risks in processing and marketing strategies. The dairy cooperative, Tillamook County Creamery has been in business for many years and has been consistently successful in Oregon. The Organic Valley Family of Farms is relatively new but it engages over

500 farming families and nearly 20,000 dairy cows in several states. Other cooperative efforts have struggled with product quality consistency, or lack sufficient scale to be economically viable.

Our agriculture has evolved into monoculture production in many cases. There likely are more integrated production systems that are more ecologically sound, feasible, and profitable. These and other ideas need further study to evaluate and to determine if there are needed policy changes to eliminate barriers to potentially effective approaches.

Summary

Loss of the “farms of the middle” will likely continue through the next several years although small hobby-type farms may still increase in number. Unless external forces on the system change, it is expected that further consolidation of food animal industries will occur.

Value-retained niche direct markets will be attractive to a significant number of small and mid-sized farms but that alone will not account for a large percentage of farmers currently on the land. The concept of regionally oriented value chains organized to produce and deliver high quality specialty products may add significantly to the numbers of mid-sized farms that can survive.

Integrated studies of alternative food system models are needed that can allow for viable participation of numerous family farms to provide rural economic stability.

Can small and medium sized farms survive? The answer is still “**YES**” ... but ...

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Animal Rights, Animal Welfare, and Animal Well-being: How to Communicate with the Outside World

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Although “walking the walk,” is clearly the highest priority when it comes to humane and ethically proper treatment of farm animals, “talking the talk” has been a barrier to clear thinking and effective action for at least two decades. Do terms such as “animal rights,” “animal welfare,” and “animal well-being” mean something different, or do they amount to substantially the same thing? The answer to this question depends on whom you ask. Arguably, these terms are roughly equivalent to the majority of the food consuming public, who would like to be assured that food animals are able to live reasonably happy lives, free from disease, discomfort and distress, but who do not see anything morally inappropriate about raising animals for food when these expectations have been met. The terms have not been thought equivalent within the circle of animal producers, animal protectionists and the scientific, legal and other experts who work with them. There have been numerous attempts at definition, redefinition and spin over the last decade and a half, as various actors have attempted to influence opinion and events by influencing the language that people use to describe the interests of food animals that deserve protection, respect and consideration from producers, regulators and the general public.

It is time to call a truce in this war of words, though the situation is now so thoroughly confused that negotiation will be difficult. This paper provides a guide to the perplexed. The goal is to clarify what the terms, “animal rights,” “animal welfare” and “animal well-being” mean to the respective individuals and groups who use them, and to indicate why they use the terminology that they do. A schema is developed for understanding these terms as making substantive claims about the interests of animals and the ethical significance of human use of animals. That schema notes three distinct patterns of meaning relating to the use of these terms to designate a political agenda, to make a conceptual point about law or policy, and to make a philosophical point about ethics and moral obligation. The root complexity of these distinctions makes it unlikely that we will see substantial progress in the consistent use of these terms in the near future, and we should continually bear in mind that it makes little difference to the majority of people, in any case.

The Development of Current Usage

The current confusion and debate over terminology begins in about 1973, the year that Peter Singer published a review article in *The New York Review of Books* entitled, "Animal Liberation." The first edition of his book by the same name appeared two years later. Although animal protection has a long and distinguished history that predates Singer's writings, his book was an international best seller, translated into many languages. Its publication thus offers a reasonable starting point for the lasted round of controversy and debate over human beings' use of animals. The phrase "animal rights" has actually been around for a long time, appearing in the title of Henry S. Salt's 1892 call for reform. Singer himself uses the phrase "animal rights" very sparingly, though other philosophers who have also influenced recent thinking on humanity's relationship with other animals use it frequently. Bernard Rollin, for example, titled his first book *Animal Rights and Human Morality* (1981), and Tom Regan, who is second only to Singer in terms of his influence with animal protectionists, titled his book *The Case For Animal Rights* (1983). Singer's term was "animal liberation," but the more common name for the recent spate of activism and social concern is *the animal rights movement*.

Understood as the name for this broad social movement, the term 'animal rights' covers a number of different causes, concerns and perspectives. Included among them are the following:

1. Reform or elimination of the use of animals in medical research
2. Reform or elimination of the use of animals in product testing
3. Opposition to hunting of wild animals for either commercial or recreational purposes
4. Reform or elimination of confinement of agricultural animals (often referred to as "factory farming")
5. Reform or elimination of animal confinement in zoos and circuses
6. Promotion of vegetarianism as an alternative lifestyle
7. Promotion of humane treatment for all animals.

Most people who would identify themselves as supporters of animal rights endorse one or more of these causes, but many do endorse all of them. Furthermore, the difference between reform and elimination permits wide latitude for different views on the type of activism or social change being advocated. Clearly some of these views are at odds with animal agriculture in very fundamental ways, while others target specific aspects of food animal production for reform. At the same time, it is possible to regard oneself as an advocate of animal rights while at the same time being relatively unconcerned about animal agriculture.

At the time that the animal rights movement was just beginning, animal producers regarded themselves as more considerate of animal interests than the average person. This attitude was based both on the history of animal husbandry and on the personal experience of many animal producers. Historically, successful husbandry required consummate attentiveness to the needs of each individual animal. Producers typically owned only a few animals, each of which could be recognized by sight. Success of the farm depended on the productivity of these animals, which in turn depended upon each animal maintaining the health and physical comfort needed to produce the milk, eggs, wool, meat and byproducts on which the farm depended. As recently as World War II, this level of husbandry not infrequently involved significant personal sacrifice on the part of producers and family members. Many animal producers operating in 1973 had personal memories of such sacrifice, and many more had devoted many hours of care to farm

animals as children growing up in rural areas. As such, animal producers were understandably inclined to regard their own farming activities as entirely consistent with responsibilities of humane animal care.

However, people professionally involved in animal agriculture experienced unprecedented technical and economic change in the years immediately preceding the beginnings of the animal rights movement. The era saw the advent of concentrated animal feeding operations (CAFOs) for poultry and hog production and the widespread development of feed additives including hormones and anti-microbial drugs as growth promoters. Industrialization in commodity crop production caused a transformation in the structure of farm ownership and the supply system for delivered animal feeds. This transformation had a number of repercussions. It encouraged some crop farmers to view specialized livestock production either as a way to add value to crops or as a way to utilize acreage that could no longer profitably support crop production. Specialized producers could supply animals to a restructuring and consolidating processing industry. Older systems of mixed crop and extensive livestock production were often less competitive either with respect to production costs or with respect to their ability to deliver product in conformity with the needs of the processing industry. The most important implication of these complex and multi-faceted changes was that livestock producers, their suppliers and animal products industries were preoccupied by the ongoing challenge of maintaining profitability. This challenge has only become more complex and daunting since the 1970's.

The upshot for present purposes is that neither animal producers nor others professionally involved in animal agriculture welcomed the additional challenge being laid at their door by the animal rights movement. It is, in fact, more accurate to say that they regarded it as deeply antagonistic to their interests, poorly informed about the realities of animal production and mystifying in its reliance on philosophical arguments about the moral standing of non-human animals. This is not the place to evaluate the accuracy of perceptions held either by self-professed animal rights supporters or by the livestock industry. Suffice it to say that it became important for many livestock industry professionals, including farmers, veterinarians, animal scientists and others representing the equipment, feed and animal health industry to differentiate the view of animal interests that they associated with themselves from the values being professed by the advocates of this new social movement. As a result, many chose to designate this view of animal interests with the term *animal well-being*.

At virtually the same time that the aforementioned events were transpiring, scientific conceptions of animals and attendant methods of study outside the agricultural sciences were undergoing significant developments. Konrad Lorenz promoted the idea of combining ethology with evolutionary theories, leading to a new approach to the study of animal behavior (Lorenz, 1965; 1982). Donald Griffen expanded this approach to include studies of animal cognition and awareness (Griffen, 1976; 1992). The broader public became aware of these approaches largely through Jane Goodall's work on chimpanzees (1986). Goodall has become a powerful voice in favor of ethical obligations to non-human animals, (Goodall and Bekoff, 2002). The move to applied ethology did not take place entirely outside agricultural contexts. The Society for Veterinary Ethology was created in 1966 and changed its name to the International Society for Applied Ethology in 1990. *Animal welfare* is the favored term for the ethically significant interests of non-human animals among applied ethologists (Fraser, 1999).

The current situation is thus one in which three distinct groups have developed distinct ways of indicating the ethically significant interests of non-human animals. This provides a sociological explanation for why there has been a proliferation of terminology, though the situation is actually more complex than the above discussion indicates. In addition to 'animal liberation', other terms have been proposed to discuss ethically significant aspects of animals, such as 'telos', 'intrinsic value' and 'dignity of the creature.' Although there are distinct meanings that can be attributed to each of these terms, as well as to animal rights, animal well-being and animal welfare, there is also a considerable degree of overlap. Furthermore, various people within each of the three groups already described have used all three of the terms in somewhat inconsistent and overlapping ways. As such, it is not surprising that confusion reigns. Nevertheless, there are three clear ways in which animal rights and animal welfare are used in opposition with respect to each other, and these three types of opposing meanings provide a template for understanding and communicating three important points with respect to animal use and animal agriculture. I will also re-visit the question of animal well-being with respect to each of these three ways of setting animal rights in opposition to animal welfare.

Animal Welfare and Animal Rights as Politically Opposed Ideals

In my 1998 book, *Agricultural Ethics: Research, Teaching and Public Policy*, I asserted that "Among groups active in promoting legislation, reform and general awareness of animal issues, those who advocate relatively moderate reforms describe themselves as animal welfare activists, while those who advocate more sweeping reforms describe themselves as animal rights activists," (Thompson, 1998, p. 132). More recently, Joseph Lubinski has characterized the difference as follows:

Briefly, one might understand welfare and rights to lie at opposite ends of the protectionist spectrum. Animal welfare advocates support the types of reforms long sought on behalf of animals – increased penalties for unjustifiable harsh treatment, in other words. Welfarists accept the legal status of other species as property, even condoning such a classification. Moreover, they acknowledge that animals always will be, and perhaps to some extent should be, used as resources for humanity. The limit, however, is that animals should not suffer unnecessarily at the hands of people. In short, then, welfare advocates seek a benevolent dominion over animals that expressly reaffirms humanity's superiority to other species.... On the other end of the protectionist spectrum lie animal rights advocates. Rights advocates seek to first change the fundamental legal status of animals away from mere property towards something closer to personhood. Such a change would open the door to more expansive reforms down the line. At base, rights advocates believe that all animals, human and otherwise, possess some inalienable rights that deserve recognition and protection. To the law, these might be characterized as fundamental rights that must never be abridged except in the most dire of circumstances. The number and scope of such rights do not come in one size, but rather are unique based on the intellect and capabilities of each species. (Lubinski, 2004)

The goals of animal welfare activists can be characterized as consistent with longstanding U.S. statutes dedicated to humane treatment for animals, as well as the Animal Welfare Act of 1966, which was amended in 1985 to provide the current basis for U. S. Department of Agriculture

(USDA) regulation of animals used in scientific research (Favre, 2002). Animal welfare activism emphasizes voluntary efforts to improve the treatment of animals and enforcement of existing laws. Animal rights activism can, in contrast, be described as advocating far more extensive regulation of human use of animals than has hitherto been the case, including a dramatic reduction in (if not the elimination of) the use of animals in scientific research. Some animal rights activists have also advocated vegetarianism as a personal moral responsibility or as a form of social protest against existing practices in animal agriculture.

The 2001 proposal to more aggressively regulate the transport and handling of non-ambulatory or “downed” livestock would be an example of a typical reform sought by animal welfare activists. With respect to CAFOs and the trend toward vertical integration within the livestock industry, it is likely that both animal welfare activists and animal rights activists would see substantial basis for reform. The difference between these two perspectives emerges most clearly with respect to the need for reform of the property code as it pertains to animals. Keeping of livestock as chattel property forms the legal and economic basis for contemporary animal agriculture. Substantial change in the legal status of animals as property has the potential to substantially alter both the current practice of animal agriculture, as well as the basis for future legal challenges to any agricultural production practice involving animals.

Within the framework of political activism, “animal welfare” and “animal rights” both refer to perspectives advocating a change in the regulation and use of animals, including extant production and handling practices in animal agriculture, though there are important differences that exist with respect to the nature and degree of change that is advocated. It may well be in virtue of this fact that those who represent the interests of animal producers and the livestock industry sought alternative terminology that would not imply the need for change or reform, or it implies at least neutrality with respect to the need for reform. An August 16, 2004, automated Internet search on the term “animal well-being” yielded links to research centers at Washington State University, Purdue University and to a number of sites maintained by the USDA Agricultural Research Service (ARS). It is thus reasonable to infer that if animal welfare and animal rights are understood as politically opposed ideals, animal well-being can be interpreted as a political ideal calling for little or no reform.

The evidence for such an inference is mixed, however. For example, the National Livestock Producers Association (NLPA) maintains a website under the heading “Animal Well-Being” that describes a commitment to animal welfare, advocates passage of the Downed Animal Protection Act, and indicates its participation in the Farm Animal Welfare Coalition. As such this organization representing producer interests shows little reticence about embracing either the term animal welfare or a political agenda of moderate reform. The National Pork Producers Council (which opposes the Downed Animal Protection Act) maintains a gateway page entitled “Animal Health and Welfare,” while the National Pork Board operates a “Swine Welfare Assurance Program,” which assists producers in performing an assessment of their production site. The United Egg Producers (UEP) uses neither term on its public access website, but does maintain a number of programs dedicated toward moderate reform of laying hen production methods. The UEP provides links to a program for certified animal care supervised by the American Humane Association, which states, “As egg farmers, we care about the welfare of our hens.” As such, animal producer groups do not consistently prefer the term ‘animal well-being’ to that of ‘animal welfare’.

In summary, the term ‘animal rights’ continues to indicate a relatively more radical agenda of political reform with respect to human use of animals, including agriculture and food uses. The term is prominently associated with organizations such as People for the Ethical Treatment of Animals (PETA), the Farm Animal Reform Movement (FARM) and United Poultry Concerns (UPC), organizations that are strongly opposed to the political aims of most groups representing livestock producers. Although the term ‘animal well-being’ continues to be used by government and university programs in animal science and veterinary medicine, the more comprehensive term ‘animal welfare’ has now been embraced by a number of mainstream livestock producer organizations. As such, the term ‘animal welfare’ can be accurately said to reflect relatively less radical and extensive concerns for animals, and correspondingly less radical agendas for reform and regulation of animal agriculture. Livestock producers themselves are divided on the nature and extent of changes that are warranted, but there appears to be little practical difference between ‘animal welfare’ and ‘animal well-being’.

Welfare and Rights as Conceptually Opposed Terms

Irrespective of their use in conjunction with animals and human use of animals, the terms ‘welfare’ and ‘rights’ represent importantly different conceptions in law, economics and public policy. Referring to an individual, the term *welfare* indicates a relative state of health, wealth, happiness or satisfaction. The term is most typically used to indicate the outcome or end-state produced as the result of some action or policy. Thus, actions and policies that cause or result in an improved state of health, wealth, happiness or satisfaction relative to prior conditions are said to *improve* or *increase* welfare, while actions that lead to a decline in these indicators are said to *decrease* welfare. The term welfare is also used in reference to groups or aggregates of individuals, where net or social welfare is understood as the sum or total of health, wealth, happiness or satisfaction among all individuals in the group. The usual purpose for invoking the concept of welfare in a legal, policy or economic context is to endorse the norm of taking an action (or adopting a policy) that optimizes the net or total welfare for all affected parties.

Attempts to measure or quantify welfare are subject to a number of difficult conceptual and methodological problems, even when the problem is confined to human beings. Kenneth Arrow (b. 1921) proved an “impossibility theorem” showing that it is mathematically impossible to derive an optimal social welfare function (that is, a calculation of the greatest good for society as a whole) from measurements of the welfare of individuals (Arrow, 1951). As such, welfare optimization is often a vexed question. Nevertheless, economists have argued that it is possible to make limited observations about the relative social welfare associated with two or more states of affairs. For example, when individual human beings engage in purely voluntary and rational behavior it is plausible to assume that they act to increase their personal welfare. This assumption supports the inference that trades made with full information and under non-coercive conditions result in net improvements to welfare. As such, some economists have argued that market prices provide a measure of the relative value that human beings place on goods (such as food, automobiles or entertainment) that are easily bought and sold.

Economists concede that other goods (such as health, environmental quality or community) resist the mechanisms of ordinary economic exchange. Providing such goods may require a degree of cooperative effort that borders on coercion. Furthermore, some people may be effectively excluded from participating in market exchange (either by inequities in law or poverty), and the impact that an activity or good has on their welfare will not be reflected in the

market price. Goods having an impact on welfare that is not reflected by market price are referred to as 'externalities' in welfare economics. The identification, conceptualization and quantification of health, environmental or social externalities can be confusing, contentious and inherently philosophical. For these reasons, welfare economics remains one of the most philosophical areas of modern economic theory (Sen, 1987). Many of these issues carry over to any attempt to understand the welfare of animals.

In contrast to welfare, *rights* are enforceable claims or entitlements held by individuals, organizations or corporations. As such, rights represent particular instruments of law or policy. Many rights protect the rightsholder against interference in the pursuit of a given course of action or activity. Thus the right of free speech protects the rightsholder from interference in the expression of opinions either verbally or in print. As a legal right, the right to free speech is validated or enforceable through the legal system. The specific recourse that a rightsholder has with respect legal enforcement of rights varies and may involve calling on the police power of the state, or through court injunctions or lawsuits intended to recover damages. Other rights are validated by common custom and enforced only through informal activities. Thus the right to be served next when one reaches the front of a line will be observed in virtually all U.S. commercial establishments where some alternative system (such as taking a number) has not been explicitly indicated. The customary basis for this right is quite robust even though it does not enjoy direct legal support.

Welfare and rights are thus conceptually distinct, though not strictly opposing concepts. Indeed, it is possible to argue that legal or customary rights should be evaluated in light of their impact on welfare: rights that increase welfare should be implemented and enforced; rights that decrease welfare should be abandoned. Such arguments are characteristic of *utilitarian* legal and economic philosophy. In opposition to this view, some have argued that the social and legal point of rights should be to block exactly the kind of benefit and harm trade-off evaluation that utilitarian evaluation involves. Ronald Dworkin notes that rights can be thought of as "trumps" that override cost-benefit style trade-off optimization of impacts on welfare (Dworkin, 1977). For example, the point of thinking that one has a right to be served next when one reaches the front of the line may block a practice of serving those whose time is more valuable. The holder of this right may certainly voluntarily cede his or her place in line, but it is only because they hold this place by customary right that they may do so at their discretion. In fact, secure property rights must be in place for any form of voluntary exchange to take place (Schmid, 1987). Thus, domains of law and policy in which rights are at stake are often said to stand in opposition or contrast to those domains where optimizing welfare is appropriate.

This basic contrast between welfare and rights can be readily extended to animals. Animal welfare concerns relative impacts on animal health, happiness or satisfaction (we may assume that animals are unconcerned with wealth). There are clearly a number of measurement problems associated with animal welfare, but it should be noted that all forms of welfare pose obstacles to objective measurement (Fraser, 1999). The main application of animal welfare will be to include impacts on animal welfare in an optimizing exercise that also includes impact on the welfare of human beings. Animal rights are enforceable claims or entitlements made on behalf of animals that are validated by law or custom. Although animals are incapable of asserting claims or entitlements, this does not substantially limit the applicability of the concept of rights. Claims and entitlements are routinely asserted on behalf of children, corporations, absent parties, and physically or mentally impaired adult humans, all of whom may be incapable

of asserting a claim or entitlement. The main application of animal rights will be to block a welfare optimizing exercise by stipulating a standard of conduct or entitlement on behalf of an animal that must be met even at the cost of adverse impact on the health, wealth, happiness or satisfaction of other parties.

Although the political usage indicated above clearly dominates the discussion of animal use in agriculture, the conceptual distinction outlined here is relevant to livestock production. If there are circumstances in which law or custom validates an individual animal's claim to care or humane treatment even when providing care or humane treatment causes harm to the welfare of other parties (human or animal), it is accurate to say that a principle of animal rights is in effect, rather than a principle of welfare optimization. It is clear that there are indeed certain circumstances in both law and policy where this is the case. With respect to law, longstanding codes protect animals from cruel and inhumane treatment. These laws are routinely enforced without regard to the relative costs and benefits (that is, the net impact on human and animal welfare) of doing so. Purely customary animal rights may be even more robust, as many animal producers will incur substantial costs to relieve individual sick, stranded or vulnerable animals of suffering.

Furthermore, many of the animal welfare standards (such as cage size for laying hens) currently being developed stipulate standards for the care or housing of individual animals. They do not enjoin producers to weigh animal and human welfare in an optimizing fashion. Such standards may not involve radical political reform, yet it is clear that they have effectively established an enforceable claim on behalf of the individual animal. As such, it is at least conceptually accurate to say that some of the reforms being sought in conjunction with animal welfare do indeed result in effective rights for farm animals. To advocate for a specific animal right (such as a minimum space requirement) does not imply advocacy of more extensive reform of the legal system, such as a revision of property codes that allow animals to be treated as chattel. Furthermore, to advocate for a specific legal or customary right is fully consistent with a philosophical commitment to the utilitarian approach, as will be discussed below.

Usage of the term 'animal well-being' adds little or nothing to the conceptual distinction between welfare and rights in a law and economics context. It is possible that some have resisted the term 'welfare' because they associate it with entitlement programs for poor or indigent human beings (Thompson, 1998). It should be noted that welfare entitlement programs actually establish a right to a payment or to a particular level of well-being for their individual human recipients. Welfare programs are not, in fact, extensions or applications of the welfare approach to law or policy.

Welfare and Rights in Animal Ethics

The conceptual distinction between welfare and rights carries over into philosophy and ethics. One of the most critically important themes in ethics is the tension created whenever it is unclear whether cost-benefit style optimization of welfare is ethically appropriate. Opposing philosophical views are argued at both a deep and practical level. At a deep level, the contrast is between utilitarian or consequentialist approaches to ethics and rights-based or deontological approaches to ethics. Philosophers who take a consequentialist view argue that at the deepest level, ethical conduct aims to bring about the best consequences, that is, the state of affairs having highest possible ethical value. Utilitarian philosophy further holds that the ethical value of

consequences is to be assessed in terms of impact on welfare, as defined above, and that the welfare of all affected parties must be included in evaluation (Sen, 1987). In opposition to this view, other philosophers have held our understanding of moral or ethical duty derives from notions of freedom, autonomy, fairness and respect, that these notions are often defined in terms of relationships to specific individuals, and that whenever acting to bring about the best consequence conflicts with duties to specific individuals, duties override the goal of seeking the greater good. For example, Immanuel Kant (1724-1804) argued that other human beings must never be treated solely as a means to the larger end of bringing about a social good.

At a practical level, many utilitarians concede that it is inappropriate to evaluate every action by calculating its effect on total welfare. This is so in part because the cost of assembling accurate information on consequences can become onerous, and also because it is reasonable to presume that following a stable moral system of rules for respecting other individuals' rights may be a more reliable way to produce the best outcomes than case-by-case optimization (Hare, 1981). For their part, non-consequentialist philosophers concede that so long as more fundamental interests have been adequately accounted for, it may be appropriate to engage in cost-benefit style optimization as a practical approach to decision making. As such, this philosophical disagreement can be less problematic in practical settings. Nevertheless, utilitarians will regard the welfare of affected parties as the appropriate focus of practical decision making, while non-utilitarians will argue that welfare is at best only one of many factors that is relevant to practical ethics.

The philosophical debate between utilitarians and rights-based thinking in ethics has been particularly relevant to understanding human responsibilities to other animals. Two of the most influential figures in the animal rights movement, Peter Singer and Tom Regan, have taken philosophically opposing views on this question. Singer, the utilitarian, has argued that it is the cognitive experience of animals that is ethically significant, that is, their ability to experience cognitive states of pain or dissatisfaction. Singer's philosophical approach in animal ethics is to argue that the welfare of animals must be included along with that of humans when evaluating human conduct. Singer believes that the suffering of animals in intensive livestock production settings is far more significant than any offsetting economic, sensory or nutritional benefits that human beings derive from using them in this manner, and it is on this basis that he has opposed modern intensive production methods. Singer does not oppose the use of animals in agricultural setting in principle, and would find a number of traditional extensive production practices ethically acceptable, especially when they are necessary for insuring human subsistence needs (Singer, 1993).

Regan has argued pointedly against Singer's approach to animals on the ground that utilitarianism is an inadequate approach to ethical thinking of any kind (Regan, 1985). Regan's view is that vertebrate animals, at least, possess a form of subjectivity that unifies their perceptions, experiences and behavior. Regan believes that this form of subjectivity is the bearer of a unique identity constituted from memory and from the individual animal's cognitive representations of its environment, including relations with other individuals (both con-specific and trans-specific). Regan argues that human beings recognize moral duties to respect this form of subjectivity when it occurs in other human beings, and that these duties block or override trade-offs that would involve using other human beings that sacrifice or violate their capacity to carry out their own lives. He then argues that we cannot reconcile the recognition of such duties with respect to other humans with the denial of similar duties to non-human animals,

which he believes are also owed an opportunity to carry out their own lives. Such duties serve as the basis for claims that can be made on behalf of individual animals, such as the claim that humans should not prevent an animal from living out its life by killing it. Following the logic for linking claims and rights discussed above, Regan's philosophy provides an argument for an extensive set of animal rights that would prohibit slaughter for meat production, as well as many other current practices in contemporary livestock production (Regan, 1983).

As noted above, Bernard Rollin has also argued for animal rights. However, Rollin's argument differs from Regan's in almost every particular. For Rollin, rights arise out of an implicit social contract among human beings that stipulates mutual expectations for conduct. Rollin argues that general expectations with respect to animal use continue to endorse raising animals for food and other products, but that whereas society was once willing to leave the humane treatment of animals largely to the personal discretion of their owners, social expectations now require a more formalized set of legal rules and industry standards specifiable as rights (Rollin, 2000). These philosophical differences explain why Regan's view of rights provides little room for compromise with animal production, while Rollin's view offers more latitude.

Although Singer, Regan and Rollin are academic philosophers, their views are relevant to competent participation in the development and debate over animal care and welfare standards for livestock production for three reasons. First, all three of them, and especially Singer and Regan, have been extremely influential in framing the opinions of people active in the animal protection movement. As such, the ability to interact productively with animal protectionists presupposes at least minimal understanding of these ideas. Second, the philosophical distinction between animal welfare and animal rights has been a popular teaching topic on college campuses for over twenty-five years. Tens of thousands of college undergraduates have been exposed to the writings of Singer, Regan and Rollin over that time period, and it is reasonable to presume that they have begun to have some influence over the way that members of the general public understand the issues of animal use. Finally, an appreciation of the difference between these philosophical approaches can be useful to anyone interested in making a precise or reflective statement of the ethical basis for concern about the condition of agricultural animals. The ability to differentiate between the trade-off optimizing approach of Singer and the distinct rights orientations of Regan and Rollin is material to any attempt to conceptualize or communicate the basis for recommending standards on farm animal welfare. No philosophers have made systematic theoretical use of the term 'animal well-being.'

Conclusion

The distinctions that can be drawn among animal rights, animal welfare and animal well-being are complex but they are not entirely unsystematic. Focusing specifically on their application to livestock production, their meanings can be summarized as follows. Broadly, the term 'animal rights' is associated with radical reform of animal production, including change in the legal status of farm animals. The term 'animal welfare' is associated with a less radical reform agenda, including reforms currently accepted and endorsed by producer groups. The term 'animal well-being' was originally introduced to indicate the most modest range of reform, but now seems to be either equivalent to animal welfare or is falling into disuse. The terms 'welfare' and 'rights' are also associated with distinct approaches in law and policy, with 'welfare' commonly being used in connection with laws or policies that advocate case-by-case optimization of aggregated costs and benefits, and 'rights' commonly being used to indicated

enforceable claims that override such case-by-case optimization. This usage can be meaningfully extended to law and policy relating to agricultural animals, so long as one is careful not to confuse this usage with the previous sense. In addition, philosophical views of animal welfare and animal rights that are based on the distinction between trade-off thinking, on the one hand, and enforceable claims and entitlements, on the other, have been very influential in shaping the thinking of a large number of people. This provides an additional reason to be careful both in using the terminology and when interpreting the intended use of others. Finally, it is worth noting that despite the possibility of making a careful and systematic set of distinctions, popular use will likely vary substantially.

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Views on the Humane Treatment of Food Animals

The Well-being of Farm Animals: Exploring the Intersection between Values and Technology

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Growing social and ethical concern about the introduction of more industrialized intensive, indoor practices and the pursuit of highly efficient production systems to the near exclusion of care values and standards have forced those involved in animal agriculture to revisit the idea of proper treatment of farm animals (especially in the poultry and swine 'industries'), and the nature of the relationship between animals and human beings. Over the last three decades or so the modern animal protection and/or care movement (depending on the exponents' emphasis) has centered mainly on either securing more extensive legal protections for animals (Wise, 2000) undercutting the view that animals are but property and not sentient creatures with interests or "subjects of a life" in their own right (Singer, 1990; Regan, 1983 and 2001, respectively), and/or contending that protection against unjustified suffering and promotion of natural lives should assume the shape of a moral equilibrium underscored by values founded on good animal care standards and sound ecological bases like those found in the traditional husbandry ethic (Rollin, 1995) or the agrarian ideal (Thompson, 1993).

Until quite recently, many interested in improving the lot of farm animals have been working to that end independently. On the one hand, ethicists and philosophers (and like-minded proponents of animals' interests) have diligently reflected on the moral status of animals (and its implications for their treatment), and have offered critical philosophical frameworks and ethical guidance. On the other hand, animal scientists and producers and policy-makers who subscribe to scientific assessment to inform their practices and decision-making, respectively, have been striving for workable humane standards that are also economically viable. The gap between the two camps is decreasing, albeit piecemeal, as science meets ethics to address animal welfare concerns and concerns raised by vertical integration in farming to promote cost efficiency.

Two important developments reflecting this bridge between science and ethics have occurred in the last few years. In the first instance, philosophers and animal ethicists who rely heavily in their arguments on the capabilities of animals (like their capacity for pain and pleasure, emotion, self-awareness and cognition), are slowly but surely acknowledging the need to have their philosophy empirically grounded. In their bid to beef up their arguments in favor of happy or dignified existences for farmed animals, they have turned to scientific understanding of not only their capacities, but how these capacities relate to what really matters to animals. In the second instance, scientists and those who rely on the scientific community for guidance are beginning to explore the ethical implications of their work and the values that underlie their views of the nature of animal welfare (Fraser, 2003; Fraser and Preece, 2004; Sandoe et al, 2003).

While bridging the gap between science and ethics is immensely important and reflects a serious commitment to the end of humane farming, there is also a need to look beyond these somewhat clearly marked out but narrow areas of study, and ruminate on the direction in which animal agriculture, as a system of multiple agents and technologies is heading. Thinking 'larger scale' or 'big picture' involves looking at issues regarding the governance of animal agriculture and considering broader food ethical issues. Alternatively put, it involves looking at

contemporary animal production as a ‘form of life’ that has emerged in the wake of certain technologies and technological systems over the last half century and evaluating its merits relative to deeply held moral commitments we have about the nature of feeding people and caring for animals from whom we benefit.

What follows is a discussion of one facet of this institutional dimension. The relationship between values and technology is introduced as a matter for further consideration. More specifically, this paper explores how values are embedded in the technologies used in animal agriculture. To what extent (and how) has technology seduced us to turn a blind eye to other commitments such as good husbandry and conscientious stewardship in favor of the promise of cheap and abundant food? Arguably, the recent technologically induced seduction (reflected in the mode of production of the last 50 years or so) has made animals and their interests morally invisible and in part made it difficult for those who are the primary caregivers of animals to stay committed to socially acceptable care standards and values.

This paper explores the relationship between technology and values by setting out some vocabulary and concepts that highlight some ways in which values can come to be embedded (and pervasive) in animal agriculture. In doing so, it highlights the view that while we may be in the grip of a kind of ‘technological determinism’ that has spawned homogenous thinking or “groupthink” inertia with respect to animal agriculture and the moral status of animals, this determinism is by no means a ‘runaway’ train on an immutable trajectory. Recognizing this fact and unearthing the forces behind how values are embedded in technologies employed in animal production, is a critical step in transforming our relationship with farm animals at an institutional level and placing humane standards in animal agriculture at the outset.

Terms and Conceptual Tools

Technology has an instrumental character as well as political, social and moral dimensions (Bijker, 1995; Winner, 1991). On the *instrumentalist* view, technology is perceived as value neutral. Technology is neither inherently good nor bad. Its moral nature is the result of how it is deployed by human agents (for their “good or bad” purposes). As technical artifacts, objects, machines, devices, instruments, appliances, gadgets, and implements, technologies help to accomplish a variety of human tasks in (putatively), non-prejudicial ways.

An offshoot of this view is the belief that technology or technological progress has an “internal dynamic... and is unmediated” by social factors (Winner, 1991). This view is sometimes understood as ‘Technological determinism,’ and it has two main tenets: (a) technological progress follows a certain pre-fixed path; and (b) social institutions must comply with certain “imperatives.” Arguably, these imperatives constrain human behavior (Feenberg, 1999).

The *interactionist* view, on the other hand, centers around the inextricable relationship between technology and societal values. It highlights the network of actors (and their framing assumptions and values), involved in all phases of the ‘life’ of a technological artifact and its attendant techniques. It properly understands technical artifacts and techniques as being embedded in a technological system. Here, there is an on-going dialectic between society and technical artifacts and techniques. It is not only technology which shapes (or constrains) society’s values and norms, but society shapes technology as well (Bijker, 1995; Feenberg, 1999). Hence, technological progress does not necessary have to follow a predetermined path,

but rather it is to a large extent 'underdetermined' by the aspirations and purposes of the community of makers and users. The community of users, for example, invest, through a process of constant dialogue through a gradual process of 'voting with their wallets,' or something more radical like boycott of certain products all together. Interactionists hold that technological systems and their technologies reflect social interpretation, moral judgment, human ends and values. These systems are infused with meaning (social, ethical and political), at the outset. As one author describes it, technological systems are "deeply interwoven in the conditions of modern politics" (Winner, 1986).

The interactionist perspective of technology provides a good forum to analyze and critique the so called technological determinism that we may find in animal agriculture. It also helps to show just how one value set, for example, production based on good husbandry, may come to be overshadowed by another, for example, the desire for a cheap and plentiful food supply.

The desire for an abundant supply of cheap food is often linked to the idea that vertical integration and certain attendant techniques and technical artifacts are most conducive to cost effective production. This interplay between values and technology indicates that by and large technologies are 'underdetermined' by social factors social factors (Feenberg, 1999). Thus, it leaves us with the possibility of challenging the putative permanence of conventional means of production by revisiting our beliefs and desires about what we want in an agriculture that relies on animal sacrifice. Looking for realignment with fundamental ends and values, our work is to discover technologies and systems that reflect our moral concerns for more humane forms of farming animals and those who care for animals.

Hegemony (or Orthodoxy)

Arguably, animal agriculture, like some other industries, has to endure dominant ideologies. These dominant ideologies reflect social hegemonies. "Hegemony is domination so deeply rooted in social life that it seems natural to those it dominates. It is that aspect of the distribution of social power which has the force of culture behind it" (Feenberg, 1999). The norms and values that flow from these dominant technological super social structures are so entrenched that they naturally go unquestioned. As these technologies become entrenched as "forms of life," they are accepted as, "the way we do things." The pervasiveness of accepting the 'way we do things here' among the general population (reflected in their oblivion or disinterest in livestock animal issues), is a testimony to the effectiveness of the hegemon in inculcating a different set of desires for or expectations (as more important and what we truly *should* want) of the food system.

Technological design (including legal and social institutions) has maintained the socially condoned convention of animal use for food. However, the prevailing form of anthropocentrism (radical or enlightened) is determined by social attitudes, policies and technological capabilities. A "technological regime" (constituted by specialists, technocrats, engineers, users, advocates, politicians, for example), backs dominant interests by reinforcing standardized conceptions of how the world *should* be conceived and how problems and solutions *should* be understood and investigated (Feenberg, 1999). A technological regime, under the orchestration of the dominant interests, conditions subscribers to attend to problems associated with the technology in a particular way that continues to support the dominant interests. In effect, these regimes "both enables and constrains certain changes" (Feenberg, 1999).

As a “form of life” supported by its “regime,” social cum technological hegemon has a “way of building [or coding] patterns of behavior (Winner, 1986; Sclove, 1995). Here, the hegemon as super social structure, lulls people into either consciously or subconsciously organizing their lives a certain way. A consequence, for example, of the acquiescence to the social cum technological hegemon is the masking of important questions like, “who is making technological decisions (questions regarding the governance of the food system, for example)? On what basis are they being made? What will the effects be and are they equitable?” In the case of conventional animal agriculture, by promoting efficiency and accepting mechanization as our tech-fix it strategy to solve our food needs, we have accepted a way of doing things as the norm which inadvertently has shielded us from important questions relating to the care responsibilities towards farmed animals.

Technological cum social hegemon may be intentionally induced by powerful agents; it may be the product of the technology (as artifact) itself, or it may be circumstantial, as in the case of a novel innovation that results in a race to not be left out.

Counter-hegemony Movements: Alternative Technological and Ethical Systems

Cultural-hegemony movements present us with alternative patterns of behavior and technologies. They help to raise questions and dispel myths by “unthinking” dominant technological ideologies and their attendant structures with which we are in conscious or subconscious compliance. They jog us from our settled ‘groupthink’ mentality. They present us with alternate relationships between technology and social values, and challenge acquiescence to preordained visions of progress or entrenched technological regimes. Counter-hegemony movements “demystify the illusion of technical necessity and expose the relativity of the prevailing technical choices” (Feenberg, 1999). By showing that other ‘forms of life’ are viable, by safeguarding a plurality of deeply held commitments, these alternative models expose and “unthink” the structure of power or ordering and highlighting oppressive or inequitable situations fashioned by hegemonic technological systems. That is, counter-hegemony movements reveal relationships and responsibilities that have been ignored by the dominant hegemon. Contemporary reactionary movements to conventional animal agriculture include organic farming, animal centered labeling schemes, free-range farming, variants of vegetarianism and veganism.

Technology, Animal Welfare, and the Ordering of the Social and Moral Positioning of Animals: An Analysis¹

The abovementioned conceptual tools together with Debra Johnson's (1997) four categories, to be described concurrently below, can help us begin to ferret through how values are embedded in farming animals under the conventional scheme. The following is but a brief sketch and further discussion and exploration is encouraged.

a. The moral and metaphysical meaning of embedded values

¹ A variant of this portion of the discussion appears in (2004) *Proceedings of the 5th Congress of the European Society for Agricultural and Food Ethics (EurSafe)*, Leuven, Belgium, September 2-4, 2004, co-authored with Carol Morgan, DVM.

This form of analysis is concerned with the values that are associated with the historical origins of particular technologies, techniques and technological systems. The historical roots of modern animal agriculture suggests that in welcoming technological fixes to meet the demand for cheap and abundant food, we may have inadvertently entrenched radical anthropocentric values as a fundamental part of modern animal agriculture. As indicated previously, modern animal agriculture is predicated on the historically well-meaning motives of (1) providing safe, cheap and abundant food; (2) helping farmers maintain an adequate work force (given the presence of more lucrative careers and jobs); and (3) overcoming risk factors associated with farm production and market competition.

Coincidentally, technological developments external to agriculture, such as refrigeration and motorized vehicles, served as background conditions that allowed market competition on a more global level to take hold in the food system (Fraser, 1999). Farmers were no longer restricted to local markets and their clientele changed to large populations of urbanites who, for the most part, saw food only for its functional qualities. However, individual farmers who lacked the ability to make large capital investments succumbed to the tide of larger, more technologically sophisticated operations, and a market economy that failed to allow farmers to have control over the prices they receive.

With the domination of the market economy, displaced farming communities no longer were central to the economic and social life of industrialized nations. Today corporately owned farms in piecemeal fashion are replacing family or individually owned ones. Farm sizes increase since larger farms have greater advantage in bargaining for feed prices, and thus can sell animal products at lower prices (Fraser et al , 2001; Burkhardt, 2000). Technology adopted in the 1950s and 1960s under the guise of disburdenment, and hailed as “progress” “valenced” away from farmer autonomy and an ethic of care and “valenced” towards exclusion, disenfranchisement and loss of valuable commitments.

Corporate agents that followed in this new industrial ‘foodscape,’ distant from farming processes did not fully appreciate the depth of what was involved in farming animals on a day to day basis, but rather favored mechanization and management practices that emphasized profit margins. Competition and lower profit per individual animal forced producers, to minimize costs, to reduce space allowances and staff time per animal as well. Veterinary service was also drastically reduced. All these changes suggest a particular view of animals, whether scripted into the technologies intentionally or not. The dominant hegemon dictated that those caring for animals embody a systematic social uncaring in the name of efficiency.

Furthermore, industrialized facilities became hierarchical institutions. The elements within the “factory” mass-production styled system are often broken down into disparate units. Each cog has a role to play in the final output, but the value of each individual agent is overshadowed by the end product. Hence, under this “regime,” the treatment of animals is underscored by the realities of the final or end stages of production – a marketable product, suitable for consumption that meets certain regulatory specifications for quality and safety. The process of raising animal subjects is eclipsed by later stage quality of commodities (i.e., focused on cosmetics such as how it looks and tastes).

b. The Support Meaning of Embedded Values and Modern Animal Agriculture

Under this form of analysis, we are challenged to revisit questions about our moral commitments and fundamental desires and values. On the support meaning of embedded values, we should ask whether the values on which industrial production of animals is currently founded should be endorsed by consumers. A consequence of supporting corporate mediated intensive systems is that farmers and producers may think that it is perfectly alright to conduct business as usual since consumers seem to be unconcerned about current day practices. However, consumer apathy reflects “a cloud of ignorance,” a consequence of technologies and technological regimes that shields them from the true nature of farming animals.

As beneficiaries of a system that supplies cheap and abundant food, consumers have been seduced away from paying heed as to how this success is being achieved and understood, and whether they have a role to play as its benefactors. By being disengaged from food production and conditioned to think of food “as just another commodity,” or in terms of its function, pure anthropocentrism prevails as a form of social hegemony. Consumers may be dissuaded, given the embeddedness of the technological regime and the success of the “Beast”. Animal welfare problems can continue because we do not find its eradication morally compelling, and from consumers following uncritically the worldview put out by the dominant technological regime, and its methods of investigation.

c. Material meaning of embedded values

Under this form of analysis, we inquire about the overt and tacit ‘pushes and pulls’ associated with the technical artifacts and their attendant techniques themselves. Two prominent technological features of modern animal agriculture are automation and confinement technologies. Automation, to minimize repetitive manual tasks was touted as a major breakthrough and deemed “as progress” when it first emerged in the 1950s. It received material validation as labor savings translated into production savings. While automation is “valenced” toward task efficiency and savings, it is also “valenced” towards isolation and complacency. Hence, one of the major draw backs of automation is reduced time per animal. It obstructs the discharge of care values and blocks the formation of human-animal bonds between primary caregivers and animals. The human-animal bond on the farm has been noted to improve welfare (Hemsworth et al, 1998), in large part, because animals get the respect and needed attention as individuals (Anthony, 2003). We should also be careful about deploying technologies that while appear to ameliorate animal welfare concerns in the short-run, may be serving as fodder for the current way of doing things. These technologies may result in short term improvements in animal welfare (such as the robotic milkers which appear to be favored by dairy cows over human handlers). However, such technologies pose a tacit partition between caregiver and animal, encouraging a more hands-off approach to animal production and arguably a complacent view of animals as commodities. More longitudinal and multi-faceted scientific research is encouraged.

Although modern housing facilities are not perfect and the problems cited by concerned animal exponents warrant serious attention, to be fair, the technology deployed has redeeming qualities that should not be ignored. What appears to be needed is the adaptation of these housing systems to the needs and natures of animals. Design factors that simply incorporate the uni-dimensional view of productivity and profit only perpetuate the myth that animal care or conscientious husbandry is not essential to raising animals and the view that they are simply

replaceable. What is needed is a different moral orientation to guide our technology. Here, we encourage further analysis on how and which technologies facilitate functions and tasks that lead to complacency and pose obstructions to animal-human contact and diminish welfare, or caregiver capacity.

Examples of Counter-hegemony Trends

Here, the focus is on counter-hegemony movements that call for a technological regime based on agro-ecological principles. Under this view “agriculture is not primarily an economic enterprise performed by individuals who want to maximize profit... but as an activity that creates and maintains productive and sustainable agroecosystems.” (Lund et al., 2004, pp. 29-30). Here, animals are an integral part in the stability and productivity of agro-ecosystem economy and ecology. Their centrality to the producer’s prosperity is not taken for granted. Farmers ensure that the contributions of *their* animals be reciprocated by performing certain care responsibilities and living up to certain expectations. These movements are exemplified in organic farming, pastoralism and agrarianism, which “venerate diligent animal care and... revere the farm family living a wholesome life in harmony with the land and their animals.” (Fraser, 1999, p. 181) These counter-hegemony movements not only challenge the technological imperatives but also the perception that consumers only want cheap food. They express a need to revisit the idea that the view that the food system has to remain radically anthropocentric. They call attention to the very narrow conception of productivity or successful agriculture and challenge the alleged intractable or deterministic nature of farming animals in the modern paradigm. The following are just a few issues that are raised:

- a. Why can’t we engineer alternative housing environments that suit animals’ behavioral needs while continuing to provide a satisfactory level of production?
- b. Why can’t we afford animals enriched living spaces and slaughter facilities that reduce distress?
- c. Should alterations (such as castration, teeth clipping, tail-docking) be allowed to continue if we can through manipulation of housing conditions mitigate undesirable or aggressive behaviors like tail biting, fighting, and cannibalism?
- d. Should the use of drugs and nutritional therapies continue if there are alternative technologies or techniques that are better for animals and for human health?
- e. How can we locate, structure and organize slaughter and meat inspection facilities to minimize animal distress?

By studying the technologies of counter-hegemony movements we can identify more clearly the flaws in the present technological regime. By looking at the values and technologies embedded in modern animal agriculture, and the values and technologies in successful alternatives, perhaps it is possible to reshape the future of animal agriculture into more socially and morally responsible patterns that reflect humane ideals and influence consumer interest in food systems.

d. *Expressive meaning of embedded values and counter-hegemony movements*

The above mentioned counter-hegemony movements reflect an enlightened anthropocentric view, stewardship if you will, that promotes careful attention to the appropriate uses and consequences of technological means. The technological regimes here revolve around issues like how we should live together, who decides what technologies are developed, how they should be administered and how these technologies shape our social relations as citizens and consumers and all those involved in food production.

In Book II, Chapter 3 of the *Politics*, Aristotle wrote that, “What is common to the greatest number has the least care bestowed upon it. Everyone thinks chiefly of his own, hardly at all of the common interest.” What counter-hegemony movements do is to lift the “cloud of ignorance” about the nature of our food system so that we can “unthink” the myths that hinder the recognition and realization of time-honored norms and values. What is brought to light by these reactionary movements is that farm animal welfare should be *our* concern. As long as we benefit from animal sacrifice, it is incumbent upon us to establish farming practices and technologies that meet high animal welfare standards.

Counter-hegemony movements express a need to develop new conceptual tools to understand the problems associated with traditional and conventional animal agriculture as well as the capabilities and limitations of technologies to come (including modern biotechnological fixes). Empirical examples of successful and unsuccessful efforts from both industrial and sustainable agriculture ought to be presented so that we might uncover moral foundations that encourage the development of technologies that are wise to the seduction of quick, but temporary technological fixes.

Conclusion

On-going discussion about how to support institutional changes that seek to harmonize agricultural practices with animals’ welfare and ecological principles, and which meet with societal expectations should be pursued. The thesis of technological underdeterminism leaves the door open to conscientious deliberation and implementation of enlightened policies for the generation of new technologies to fit certain humane ideals and aspirations. Hence, instead of conceding to the alleged intractable nature of the technological system of modern animal agriculture, there is hope that we can re-invigorate the technological bases supporting animal agriculture with fundamental animal care values. Optimistically, given the collapse of the thesis of technological determinism, and the fairly short life span of the present incarnation of animal agriculture, the fates of the animals and their primary care-givers are yet undetermined. If the users, both primary care givers and consumers (at the national and global levels) do not support any part of the “Beast” because they find that it is morally wanting, then it cannot be sustained. As Winner and Feenberg point out, social factors are required to produce and maintain a technology and the technology will change if we demand a different set of social conditions (Winner, 1986, 1991; Feenberg, 1999). We may yet achieve a moral equilibrium between good animal care values and standards and important human interests, if we challenge technological determinism and hegemony that stress a lopsided view of who, from the moral viewpoint, counts in livestock production. As counter-hegemony movements attest, we are not simply ‘what we eat’, (or what is made available to us to eat, and how) but rather we should strive to ‘eat what we are.’ Conscientious governance of the agricultural system should reflect more than just the

uni-dimensional value of cost efficiency. The values found in counter-hegemony technologies and technological systems can help bind us back to some overlooked or overshadowed commitments to humane production.

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Views on the Humane Treatment of Food Animals

Animal Rights and Human Responsibility

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Thank you. I greatly appreciate the opportunity to be here to discuss the topic of animal rights, and I hope to bring a useful perspective to this issue of growing interest. Any discussion of animal rights calls us to examine very fundamental ethical questions about who we are and what our relationship with other creatures should be. It is not only about animals, but about us, and when we address animal rights, often we are really talking about human responsibility.

The Bible says we have “dominion” over the other animals, but what exactly does this mean? Is it OK to exploit other animals with no limits, or not? If there are limits on what we do to other animals, what are they, and why? Is it OK to slaughter and eat animals? If we can live and be healthy without eating meat, does our taste preference justify killing other animals? Our society currently accepts that it’s OK to kill and eat animals, and today roughly 10 billion animals, mainly chickens, are raised for slaughter in the U.S. These animals are currently excluded from the federal Animal Welfare Act, and from most state anti-cruelty laws. Why are they excluded, and is this fair and reasonable?

I think Ruth Harrison, the author of [Animal Machines](#), put it well when she wrote, “...if one person is unkind to an animal it is considered to be cruelty, but where a lot of people are unkind

to animals, especially in the name of commerce, the cruelty is condoned and, once large sums of money are at stake, will be defended to the last by otherwise intelligent people.”

On today’s industrialized farms, animals are kept under conditions that are unacceptable to most consumers, and I believe this puts modern animal agriculture in a very tenuous position. It depends on people to purchase food that is produced in ways that most consumers oppose. This dissonant situation has led to an increase in the number of vegetarians in the U.S. and to a growing number of labeling programs to indicate that meat, milk and eggs are being produced in a humane manner. It could be suggested that people’s choosing not to eat animals is more of an animal rights response, while efforts to certify that foods of animal origin are produced humanely is more of an animal welfare response. The former raises the bigger questions about whether we should be exploiting other animals, while the latter assumes we will exploit them, but that we should do so humanely.

There has been an unhealthy schism in the United States between the concepts of “animal rights”, which tends to be characterized as extremist, and “animal welfare”, which is generally considered to be more mainstream. The animal rights movement has been maligned for allegedly seeking to give animals the same rights as people, including possibly the right to vote. These are not accurate characterizations of the animal rights movement or its goals.

When addressing the animal welfare perspective, it is important to acknowledge that there are many different interpretations of what is meant by “animal welfare”. Some animal rights proponents embrace the concept, while others condemn it because they believe it promotes the exploitation of animals as long as the animals are treated humanely. Meanwhile, the livestock and poultry industries are recognizing the need to address animal welfare and are putting in place various, sometimes divergent, animal welfare guidelines and humane certification efforts.

I believe it is useful to distinguish between animal rights and animal welfare in a broad philosophical context, but I am afraid these two concepts have been used to create unnecessary conflict among animal advocates as well as between animal advocates and farmers. I do not believe animal rights and animal welfare are mutually exclusive, but exist on a continuum, and I consider myself to be a proponent of both. From the animal rights perspective, I encourage people to consider a vegan lifestyle, one in which no animal products including meat, milk and eggs are consumed. But I recognize that this is a personal choice, and I cannot force it on others. From the animal welfare perspective, I believe that human beings have basic moral responsibilities toward other animals, and I believe that cruel practices should be prohibited by law.

Laws are enacted to reflect and codify societal values. As our views change and evolve, so do our laws. At one time, slavery was legal in the U.S., but it is now outside the bounds of socially acceptable conduct. The same goes for child labor and other abuses of humanity. In the case of animals raised for food, laws are currently out of line with societal values. And I believe that here and across the world, change is coming.

When we prohibit any kind of cruelty to animals, we actually give animals legal rights. We give animals the right not to suffer in a particular way, and we place moral and legal boundaries around our own conduct. For example, the federal Humane Slaughter Act requires livestock to

be rendered insensitive to pain before they are hoisted and bled to death. We give cattle, pigs and other mammals the right to a so-called “humane” death, but we have not given this right to poultry. There is no reasonable moral justification for excluding birds from the humane slaughter act, nor for excluding farmed animals from basic humane protection. Rights are conferred by humans in a social and cultural construct, and I would suggest that the laws we enact say more about us than just about those who we regard as worthy of consideration.

For centuries, western civilization has operated under the assumption that humans are distinct from other animals. But with the publication of Charles Darwin’s Origin of Species in 1859, and with continuing scientific inquiry, it’s becoming increasingly clear that we are very much like other animals – and from this recognition come very human feelings of fellowship, respect and empathy. We are more like risen apes than fallen angels. The chapter about “animal behavior” in the animal science textbook entitled Animal Science and Industry recognizes similarities between humans and other animals, not only biologically but socially. It states, “Animals, like people, are social beings. They interact, communicate, develop friendships or attachments, are dominant over or submissive to others, have some need for privacy or ‘territory’, and are affected by social relationships.” How many of these qualities are taken into account in modern agriculture?

I am always struck by the argument that animal advocates are not “realistic” in their understanding of other creatures. What could be more unrealistic than to treat living creatures as unfeeling production units, ignoring the hard reality that they have needs and natures of their own, and that they suffer?

I believe that recognizing our kinship with other animals and empathizing with them is another step in the process of social evolution – in the moral and perhaps even spiritual growth of humanity. Animal rights proponents attempt to live in a way that causes the least amount of harm to other animals, and many are vegan or vegetarian. Vegans eat no animal products, while vegetarians often consume dairy and eggs. These are not new concepts. People like Pythagorus during Greek times and the Essene’s around 2000 years ago were vegan. Some historians believe that Jesus Christ was an Essene, and this has led to a debate about whether or not Jesus was a vegetarian. But I will leave that question for the experts. The Hindu religion, one of the world’s oldest belief systems, has a long vegetarian tradition. Animal rights and a vegan lifestyle are akin to religion for some people.

For my part, I think of it more as part of a larger creed that abhors needless violence and attempts, as Robert Kennedy used to say, to “make gentle the life of this world.” I understand that violence is and may always be written into the story of life. But I believe that human beings, exactly because we are creatures of conscience, are called to better things – to constantly examine our ways and to live in accord with our best instincts.

I understand that discussing a vegetarian or vegan outlook on the world may feel unsettling to people invested in animal agriculture. Please understand that our goal is not to put any body down, including people who raise animals for food, but to bring everybody up. I have great respect for farmers who work very hard to produce a plentiful supply of food. And, I recognize that animal agriculture will be with us for many years, but I encourage animal agriculturalists to have an open mind about the future.

Animal rights advocates compare the exploitation and commodification of animals to the exploitation and commodification of other humans over the years. As western society has evolved, we have come to recognize that people who had been considered unworthy of basic consideration - such as people of color or women - deserve legal consideration. Once such consideration is conferred, it is no longer acceptable to perpetrate the kinds of cruelties that had previously been commonplace. And, when we afford humane protections to formerly exploited individuals, I believe it begins to engender a new respect and appreciation for the interests of those individuals who are no longer seen merely as objects to be exploited.

On the other hand, when a group of people or animals is treated cruelly and harmed by our actions, I think there is a tendency to rationalize our behavior in order to placate our guilty conscience. We do not want to think of ourselves as cruel, so we tell ourselves that those who we hurt really don't matter or that they deserve what they are getting. Our desire to justify our inhumanity often leads us to demean our victims.

Sometimes the reasons we use to justify the harsh treatment of animals are a little too convenient. Sometimes they have the ring of an excuse. When a cow is too sick or lame even to walk to her own death, it has been easy and convenient and economical to drag the creature to slaughter. All kinds of practical reasons can be found to excuse treating downed animals that way. But convenience and cost aren't everything, even in business, and the important question is whether it is the right thing to do.

Farm animals are commonly denigrated in our culture and society. We put others down by calling them a pig or turkey, for example. How many of us have heard the story about turkeys being so dumb that they look up in the sky and drown when it rains? I don't know where that story originated, but it has been widely circulated, despite being without merit. I have lived on a farm with turkeys for more than 15 years, and we have never had a turkey drown in the rain. I think we tell ourselves stories, like this one about how dumb turkeys are, in order to justify our mistreatment of farm animals. And even as we belittle these creatures, industrial farming has set about controlling every aspect of the animals' lives, which also makes it easier to shrug them off as nothing. What kind of respect and empathy can we have for creatures who we genetically manipulate, pack into warehouses, and then slaughter and eat?

I believe that by degrading other animals, we degrade ourselves. We engender a callousness that hinders our own ability to understand others and to empathize. I recall a farmer visiting Farm Sanctuary and seeing two young women in a barn working around a group of large, 500 pound pigs. The farmer was very concerned about the women's safety, and he urged them to get away from the animals. He explained that pigs are dangerous and aggressive, and described how a sow came after him, after he took her young piglets from her. He seemed not to understand that his taking her piglets away upset the mother, causing her to react and come after him.

Animal rights advocates assert that other animals, including farm animals, have feelings and suffer much like people suffer. In some respects, it may be that animals' feelings and suffering may be more intense than our own. When animals are subjected to cruelty, animal rights people feel compelled to stop it, but we cannot, and therefore, we are confronted with an impossible reality. Ethically, we must immediately stop unnecessary and inexcusable cruelty,

but legally, we cannot. We are forced to accept systemic cruelties that are ethically unacceptable.

Anti-slavery abolitionists, pro-lifers, animal advocates, and members of various religious and advocacy groups can become very passionate, even fanatical. This type of zealotry has even been used to justify violence in the name of the cause. But, violence is inconsistent with the tenets of these causes, and it is certainly inconsistent with the philosophy of animal rights, which at its core seeks to prevent suffering and to promote compassion. I believe the values espoused by the animal rights movement are among the best human qualities. Some of the kindest, most compassionate, people I have ever met are animal rights people.

I also know there are caring people in the farming community, and believe we would all benefit from an open dialogue. We can find common ground, but I also recognize there will be times when we disagree. And when we disagree, we can disagree respectfully. We can have a reasoned discussion, informed by the current science, in order to resolve difficult issues and lay aside false assumptions.

One assumption that needs to be addressed is the notion that farmers must be humane because it is in their best economic interest - that animal welfare is synonymous with financial welfare. I would argue strenuously against this self serving contention, which I think may have grown out of a certain scientific and academic approach. Once upon a time, before the age of industrial agriculture, there may have been some truth to this idea. But no longer. Intensive confinement farmers can keep their animals alive and productive even under stressful and unnatural conditions. Now, a steady attrition rate has been factored into the cost-benefit analysis. Now, the interests of animals and the interests of agribusiness are radically at odds.

Universities and other institutions in the U.S. have done significant research seeking to maximize productivity and efficiency in agriculture. This approach is understandable when the goal is to produce large quantities of cheap food, which has been the primary attitude driving agriculture in the U.S. I think this paradigm needs to be questioned, and that there needs to be an assessment of externalities, and of short term and long term costs, but that's a whole other discussion that will have to wait for another time.

In the U.S., we have not done much research to address farm animal welfare and our institutions are currently in a poor position to conduct such research. There has been little interest in such inquiry, especially when there is a possibility that we could find that certain farming practices are inhumane. And, in the rare instance where farm animal welfare research is conducted, there is a tendency to compare one bad system with another, which leads to the conclusion that both present problems. It is then argued that change is not warranted and more study is needed.

Inconclusive science is routinely cited as the reason to oppose reform.

Scientific inquiry in U.S. agriculture has been focused on producing cheap food, with little or no regard to humaneness. Rather than carefully assessing the welfare ramifications of efficient farming practices, some have asserted that they are humane. I think we need to accept that animal welfare and economic profitability are sometimes in conflict, especially on industrialized farms where the cheap food paradigm reigns supreme.

Commercial dairy cows commonly produce ten times more milk than they would in nature, and as a result, they spend much of their lactation cycle in a state of negative energy balance. They cannot eat enough to support this intense level of milk production. Pushing dairy cows so hard has contributed to a 15% increase in the incidence of lameness on U.S. dairies cows over the past 10 years.

In his book, Farm Animal Welfare, Dr. Bernie Rollin provides an example of how economic interests can run counter to animal welfare, and how individual productivity and well being can be at odds with overall profitability. He writes, "...it has long been known that the stocking of fewer birds per cage leads to a greater production per bird, but it is nonetheless more economically efficient to put a greater number of birds into each cage, accepting lower productivity per bird but greater productivity per cage. In other words, though each hen is less productive when crowded, the operation as a whole makes more money with a high stocking density: chickens are cheap, cages are expensive."

Some years ago, an article from *Lancaster Farming* addressed hog mortality in transport and pointed out: "Death losses during transport are too high - amounting to \$8 million per year. But it doesn't take a lot of imagination to figure out why we load as many hogs on a truck as we do. It's cheaper. So it becomes a moral issue. Is it right to overload a truck and save \$.25 per head in the process, while the overcrowding contributes to the deaths of 80,000 hogs each year?"

It is important to accept that we are dealing with a moral issue here. Ed Pajor, animal science professor at Purdue University, made this point clear when he spoke at the International Meat Animal Welfare Research Conference in Kansas City, MO in February, 2004. He cited contentious farming practices and said the question is not "Can we do it?", but "Should we do it?" At the same conference, Dr. Temple Grandin, perhaps the nation's leading livestock handling expert, addressed current farming practices and stated that "bad has become normal".

Public opinion polls consistently find the vast majority of citizens, from across the spectrum, object to practices that are commonly employed on modern farms because of humane concerns. In November 2002, voters in Florida amended their state constitution to ban gestation crates, two-foot wide enclosures where breeding pigs are confined for most of their lives. During the initiative campaign, I spoke with the manager of the swine unit at the University of Florida. He opposed the initiative, but he admitted that confining animals in crates had contributed to a loss of understanding and appreciation for pigs, what he called "pigmanship."

When I have visited livestock facilities, I have been struck by the different focus animal advocates have to the focus animal agriculturalists have. Animal rights people look at the animals' faces and eyes, and perceive fear and other emotions, while aggies look at the animals muscle conformation and see cuts of meat. I believe the commodification of sentient beings particularly on industrialized farms, has led to a growing sense of disrespect toward other animals, and this has brought a sort of depravity of humanity. Rather than recognizing these animals as feeling creatures, they are literally treated like units of production. They are packed in warehouses, lined up in rows, fed at the front end, and hosed down at the back end, just like pieces of machinery.

In his book, Dominion: The Power of Man, the Suffering of Animals, and the Call to Mercy, Matthew Scully, former speech writer to President George W. Bush, wrote:

“Just how bereft of human feeling [the poultry] industry has become was clear at a municipal court case heard in Warren County, New Jersey, in the fall of 2000. A poultry company, ISE America, was convicted of cruelly discarding live chickens in trash cans. The conviction was appealed and overturned, partly on the grounds that ISE America (short for “International Standard of Excellence”) had only six employees overseeing 1.2 million laying hens, and with workers each left to tend to two hundred thousand creatures it remained unproven they were aware of those particular birds dying in a trash can. The company’s initial defense, offered to Judge Joseph Steinhardt by an attorney named Kevin M. Hahn, asserted outright that this is exactly what the birds were anyway - trash:

Mr. Hahn: We contend, Your Honor, that clearly my client meets the requirements [of the law]. Clearly it’s a commercial farm. And, clearly the handling of chickens, and how chickens are discarded, falls into agricultural management practices of my client. And we’ve had - we’ve litigated this issue before in this county with respect to my client and how it handles manure...

The Court: Isn’t there a big distinction between manure and live animals?

Mr. Hahn: No, Your Honor. Because the Right to Farm Act protects us in the operation of our farm and all of the agricultural management practices employed by our farm.”

As Scully concludes, “Here, at last, an honest man, stating in plain language the ethic that we have now come to accept in practice.”

Is this an acceptable ethic? I don’t think so, and I don’t think most people think so. When we treat animals inhumanely, we become desensitized, and when animals are viewed primarily as production units, we lose something very fundamental. Kindness is not a finite commodity. We don’t need to chose between kindness to animals or kindness to people. In fact, I think the former helps to enhance the latter. Thank you.

Views on the Humane Treatment of Food Animals

Animal Protection

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The role of The Humane Society of the United States (HSUS) is 'Promoting the protection of all animals,' and 'Animal protection' is an approach that combines a variety of ethical positions, emphasizing the people doing the protection, the actions involved in protecting animals, and the effects of that protection on the welfare of the animals. The HSUS and many ethicists and other animal advocates argue that farm animals need more protection, and public opinion increasingly supports such a change. One reason this is contentious is that people vary in their attitude to welfare, emphasizing either physical aspects, mental aspects, naturalness, or a combination of these (Fraser *et al.*, 1997). The three approaches can also be identified in the Five Freedoms (FAWC, 1997), which include freedom from physical problems such as disease and mental problems such as hunger, as well as freedom to perform normal or natural behavior. Many producers tend to emphasize physical aspects of welfare such as health and growth. The same is true of veterinarians, and many scientists working to increase agricultural efficiency. The general public, by contrast, tends to emphasize both mental aspects, such as suffering, and aspects concerned with naturalness. Not surprisingly, these groups form correspondingly different conclusions about animal treatment. For example, interviews in the Netherlands showed that farmers who housed their livestock in intensive systems felt they treated their animals well because the animals were healthy. However, consumers felt that welfare was poor

because the animals lacked freedom to move and to fulfil their natural desires (Te Velde *et al.*, 2002).

Producers are more affected by the economics of animal production than are other members of the population, so the balance they strike between human and animal interests is likely to be different. The question, then, is how to help producers to meet public expectations that they should protect their animals better. Many aspects of farm animal protection are to the advantage of farmers, and this effect can be increased further by research and education. Other aspects can be achieved in niche markets such as organic and free range production, but are more difficult in mainstream agriculture because of economic pressures. For this reason, establishment of standards, guidelines and possibly legislation are important, because they create a 'level playing field' for producers. A recent poll showed that 62 % of US citizens favor passing strict laws concerning the treatment of farm animals (Gallup, 2003). Whatever the mechanism, increased protection of farm animals is necessary for agriculture that supplies the sort of food people want, as well as benefiting both the farming community and the animals themselves.

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Views on the Humane Treatment of Food Animals

Industry: Evolution of Poultry Husbandry Programs and Practices

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Introduction

Animal Welfare or Animal Well-being has become a publicly discussed and debated subject. The poultry industry has worked hard on animal care throughout its history and consistently worked to evolve and improve husbandry guidelines and practices. Each company generally has standards and guidelines that are communicated to their contract growers with varying degrees of detail. These details generally are in the form of housing requirements, temperature guidelines, ventilation guidelines, brooding/migration recommendations, etc.

History

We, as an industry, have been a little apprehensive when discussing welfare. We are even more than apprehensive when someone uses the term “rights”. Generally that is because the conversation is frequently discussed in forums where people are coming from the various extreme viewpoints. There are sometimes hidden or at least multiple agendas being pursued so it can quickly become combative, which results in a very guarded discussion.

Research on welfare is not frequently found in the same journals as research on performance or health. There are specific methods evolving for welfare evaluation that are not commonly incorporated into the studies on performance or health. Therefore, we have some limited support – in formal welfare terminology – to some very common practices that have made the poultry industry successful and efficient.

Both our desire to discuss welfare and our utilization of welfare methods in research are beginning to improve.

Interested Groups

There are a number of groups interested in welfare practices within the poultry industry. The groups traditionally interested in the welfare of poultry have been perhaps more focused on studying and satisfying physical needs (health, environment, nutrition, etc). Behavioral needs have some increased focus recently, at least in a more formal way. Activist groups, retail customers, food service customers, and consumers have asked questions to varying degrees and for various reasons.

Results of the Discussion

The result of these inquiries and confrontations over the past few years have resulted in a number of activities. These activities have come in the form of the following:

Welfare “Councils”

The technical issues are relatively difficult as it relates to poultry welfare. At times, it is difficult to tell the difference between what the human prefers and what the bird needs. Although there is at least some desire to scientifically study this area, the “experts” (at least those that publish in this area) are few and the work somewhat limited in scope. With all this in mind, a number of groups have established a welfare-focused group to provide them with guidance and council. These groups have incorporated live production specialists, plant processing specialists, nutritionists, veterinarians, producers, academicians, and sometimes humane group representatives. Many of these councils have used the same people and some have been very narrow in their makeup. Although it may seem more formal than necessary, I think most groups that have utilized this process have found it useful. At the very least, they have a focus group to help them address issues as they come up.

Formal Welfare Programs

There are now multiple welfare programs that have been written and distributed. These have generally been the result of the welfare councils – either creating or approving a set of guidelines. Table 1 demonstrates some examples of groups, programs, audits, and certifications.

Formal Welfare Education

There has been an increase need for education of welfare issues and terminology. In addition, there are often a number of ways to do things and we have needed to evaluate, judge and communicate welfare appropriateness of a set of given activities.

In our experience, the welfare education cannot be too “big picture” in nature. The most successful approach has been to take each group and discuss the 3 to 7 Best Management Practices (BMPs) (associated with welfare) that are important and appropriate to them.

Welfare Documentation

Welfare documentation is one of the less popular and perhaps more difficult practices to successfully implement. Requiring documentation insinuates a certain amount of distrust. It also generally considered time consuming and of little real benefit. It doesn't really matter if this is how it is perceived; a certain amount of it is necessary. Documentation comes in the form of SOP's, charts or tables that track data and have stated action levels, documentation of corrective actions, a training program and verification of that training, and check of logs of all kinds.

Third Party Welfare Audits/Verification

Due to the nature of this discussion, with multiple parties of diverse objectives, an attempt has been made by some groups to create an atmosphere of “general distrust”. In other words, even if there was an agreement on preferred practices, how might there be proof that these preferred

practices are in fact being followed. Independent third party auditing has been discussed and even embraced as an approach that will allow and encourage “trust”.

Independent third party auditing has taken a number of forms. These audits are generally (but not always) done by a person with auditing experience as well as poultry experience. NCC has a list of approved auditors that are familiar with welfare issues and the NCC welfare audit. SES has been training auditors for auditing both production and plant.

Inquiries on Welfare practices come in many forms and are answered as appropriate. In some cases an explanation of the production company’s animal welfare process, guidelines, and verification program is all the customer is looking for. In other instances, a customer may request any previously done audit. In other instances, there is another audit format or auditing firm requested.

The results of the audits are generally for review by both the production company and the requesting customer. Logically, it seems there are always likely to be things that need to be improved upon – particularly in the area of documentation. In my experience, most of the discussions of results have been positive, logical and appropriate.

Conclusions

Welfare programs are not new to the poultry industry. They may not have been called that nor have they been formal. They are becoming both. There have been a few lessons.

Transparency

We are not a particularly transparent industry. In welfare, we will have to be prepared to explain to those truly interested how we do a number of different things. This explanation will not please all that hear it.

Verification vs. Certification

The poultry industry has been successful by embracing and running programs (i.e., brooding program, temperature program). There already exists a very substantial and effective infrastructure focused on program communication and verification. In many areas of the industry, programs are verified and even audited almost weekly by a flock supervisor. Welfare practices and processes can and may already be a part of this process. Even if this is considered to be insufficient and there is a desire to examine welfare practices using an independent 3rd party, **verification** of the program is much more efficient and appropriate than a program that involves a farm-by-farm **certification**. Examining a random sample of farms or plants and looking for the appropriate practices and programs will **verify** that the program is in place.

Research Shortage

Welfare measurement techniques have evolved to many different things in the past few years. More and more research projects need to incorporate welfare metrics into an evaluation in addition to a performance or food safety measurement. It has become obvious that some of our

industry's reluctance to publish (perhaps due to a perceived or true competitive advantage) has resulted in a shortage of supporting published papers on some current management practices. In many of the discussions on guidelines, published literature is the only thing considered by some. If the process is to be led by science, more published literature pertaining to current practices is needed.

Education gaps

It is apparent that education is needed at many levels. Some of this comes in the form of academic degree programs but much more of the need would be addressed by short course certification courses as well as basic, fundamental training of supervisors and operational employees. This training needs to be clear and simple. The poultry industry is very good with these kinds of training programs and when fully implemented we will also be very successful in the area of welfare.

Views on the Humane Treatment of Food Animals

A Scientific Perspective

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The treatment of food animals is a societal concern that involves many different groups such as the agricultural sector, consumers, animal advocates, and policy makers. Each of these sectors will depend, to some extent, upon scientists to provide appropriate information to guide their approach to the issue. Although scientists may not set humane policy, they provide critical information to its development. The humane treatment of animals, the human component of animal welfare, presents several challenges to scientific enquiry.

The first challenge is one of definition. How should animal welfare be defined? Some chose to define it in terms of what can be measured, while others accept a more conceptual definition and seek ways to assess it. One of the first defining statements was that of the Brambell Committee (Command Paper 2836, 1965) that 'welfare is a wide term that embraces both the physical and mental well-being of the animal. Any attempt to evaluate welfare therefore must take into account the scientific evidence available concerning the feelings of animals . . .'. Some would argue that 'feelings' are subjective and cannot be measured, while others would ask what indirect measures could be used to assess feelings.

Key elements of the physical and mental well-being of animals were summarized within the 'Five Freedoms' of the Farm Animal Welfare Council (1992). Although hunger, thirst, pain and comfort reflect animal feelings, it has been relatively easy to develop methods that can assess these states. Often these methods have emphasized behavioral measures, although physiological indicators have also been used. Disease and injury are readily accepted as indicative of poor welfare, and assessment methodology existed within veterinary medicine. Fear and distress pose greater conceptual and methodological problems, but these have not been insurmountable.

By identifying components of animal welfare, and developing means to assess them it has been possible to study practices that affect specific aspects of humane care. For example, methods of castration have been studied to determine which results in the least pain. Floor surfaces have been studied by means of preference testing to maximize animal comfort. A great deal can be accomplished by using a framework such as the Five Freedoms to identify production techniques that minimize the impact of agricultural practices on animal welfare. Nevertheless, this method falls short on at least two accounts. The first is that it is difficult to compare the impingement on an animal's welfare of techniques that differ over time. For example, the impact of hot iron vs freeze branding will differ depending upon the time of assessment. The pain of dehorning must be compared to the pain of injuries that may result if dehorning is not performed.

A second limitation to the component method is that the overall welfare status is not assessed. Many factors impinge upon an animal's welfare within our production systems and developing an overall assessment is difficult. For example, sow housing systems allow quite different impingements on animal welfare. The stall system restricts movement and limits the possibility of environmental enrichment, yet group housing systems involve aggression and may lead to uneven feed intake. A universal measure of welfare that would combine short and long term, and physical and psychological stressors remains elusive. Even then, if we can assess how difficult it is for an animal to cope with its situation (Broom, 1996), it must be decided if this response represents a continuum or if a critical point, such as a pre-pathological state, must be reached before we consider animal welfare at risk (Moberg, 1996).

The emphasis over the past 40 years of welfare research has been on negative impacts of agricultural practices on animal welfare. In fact, it should be acknowledged that many nutritional and environmental management practices such as balanced diets and thermostatically controlled temperatures represent an improvement in animal welfare. If we accept the concept that welfare is primarily about feelings, then positive experiences should also be studied as a means of improving animal care (Duncan, 1996). Environmental enrichment, initially seen as a means of correcting a welfare deficit, could also be viewed as a means of enhancing an animal's experience beyond that of a comfortable life.

The result of these different dimensions and challenges is that animal welfare research is, as the Brambell committee would say, a 'wide term'. Studies may focus on a single procedure, or the effects of an entire system of management. It is generally recognized that behavioral, physiological, health, production and multi-disciplinary studies may all contribute to our knowledge of animal welfare. But two misconceptions should be put aside: the first that animal welfare is not a researchable topic; and the second, that the answers will be easy to obtain. We

have learned a great deal about many agricultural practices, but a great deal remains to be resolved.

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Bridging Differences Between Europe and the USA

Research

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Introduction

The European Union now comprises some 455 million people in 25 countries (EU25), compared with 290 million people in the U.S. In terms of livestock production, it is estimated that the EU25 has average populations of 89 million cattle, 154 million swine, 90 million sheep and 350 million laying hens. These compare with 97 million cattle, 59 million swine, 7 million sheep and 270 million laying hens. Stacking up the numbers, it becomes apparent that the EU25 is a major player both in terms of an internal single market and in terms of global trade. Factors affecting animal production in the EU25 member states are likely to be felt across internal and external national boundaries.

The face of agriculture both in Europe and in the U.S. continues to change. There is still the trend to move from many, small farms to fewer, larger farms and the general population becomes more and more removed from food production. Early in the 20th century, 35% of the U.S. workforce was directly engaged in agriculture (Moore & Simon, 1999). A hundred years later, less than 3% of the U.S. population resided on or worked on a farm (Moore & Simon, 1999), and this percentage is likely to continue to decrease. However, the American ideal of farming is still based on the 'family farm'. The family farm operated to feed the family - there were a few sows in a fenced paddock behind the barn, a milk cow, a plow horse to work the fields and chickens running free around the barnyard. This ideal is now far removed from reality, both here in the U.S. and in Europe, although there are still some areas within the EU25 that incorporate small, subsistence-type farming. In general, farm animal production has become larger scaled, more intensive and less obvious to the shrinking rural and growing urban populations.

The human populations themselves have become financially stable. Over the last few decades, because the overall quality of human life in the U.S. and the EU has reached such high levels, citizens have been able to turn their attention away from simply making money to support themselves and to start paying attention to and acting on other concerns of interest. One concern is the way in which food is produced - in terms of food safety, environmental protection and animal welfare (Blandford & Fulponi, 1999). The order of priority of these public concerns will vary from country to country; but within Europe, animal welfare especially has had high priority.

Drivers for animal welfare within the EU

Within Europe, government-enacted legislation, both at an individual country level and across the European Union as a whole, has been passed in response to "public" concern about animal welfare specifically - that is, genuine concern from individual members of the public, but also welfare lobbying groups that "represent" public opinion. The influence of such groups should not be underestimated, because they have played a major role in the banning of such systems as gestation crates and battery cages.

Historically, the animal welfare issue became a prominent point of concern during the 1960s, through the publication of *Animal Machines* by Ruth Harrison (Harrison, 1964) and the subsequent establishment of the Brambell Committee (Brambell, 1965) in the U.K. These raised public awareness of how farm animals in general were being kept. However, it then took approximately 15-20 years before the increasing awareness and publicity was converted into

legislative action at the individual country level, in places like the U.K., Sweden and Finland, and perhaps another 5-10 years more before wide-ranging legislation was put in place at the EU level. For example, EU Council Directive 2001/88/EC banned tethers from 2006 and gestation crates (apart from 4 weeks post-insemination) for sows from 2013 and EU Council Directive 1999/74/EC banned conventional cages for laying hens from 2012.

Drivers for animal welfare within the U.S.

There is strong evidence to suggest that animal welfare issues are becoming increasingly important within the U.S. and that concern about how food animals are produced is gaining mainstream popularity rather than being seen as a radical, animal-rights-type issue. The U.S. food industry is responding. The retail sector has been stimulated to initiate their own welfare-driven schemes, such as the Animal Welfare Guiding Principles of McDonald's. Here, McDonald's started auditing packing plants in 1999 to ensure that cattle were being humanely slaughtered. They then progressed toward adopting humane standards similar to those proposed by the United Egg Producers (UEP, 2002), but with immediate compliance with increased space requirement and a future end to feed-withdrawal induced molting and beak-trimming, insisting that the producers from which they bought eggs adhere to these standards. Imposition of unannounced audits and adherence to these rules put a new level of attention on livestock welfare.

In typical competitive fashion, other 'fast-food' chain restaurants followed suit, with Burger King, Wendy's, Kentucky Fried Chicken and others also accepting and establishing animal welfare guidelines. The National Council of Chain Restaurants have joined forces with the Food Marketing Institute in order to establish common ground through their Animal Welfare Program. Some of the aims of this program are to bring consistency in assurance schemes across the U.S. retail sector, to implement practicable and attainable guidelines based on science and to implement a measurable audit process. Together, the NCCR and the FMI represent about 70% of the U.S. retail sector and thus, their potential influence on U.S. animal production is very great.

However, all adherence to such guidelines is voluntary and although the U.S. has been following the EU with respect to animal welfare issues, one exception might be that we are unlikely to see national level legislation in the U.S. to govern on-farm livestock production practices. To date, although there is one national law covering transportation and one national law covering slaughter, no national laws governing livestock production practices on the farm have been created in the U.S. (Wolfson, 1996). However, it is likely that, similar to events in the EU, the U.S. public will gain an awareness of livestock production practices and start to question their appropriateness. And, although national laws are difficult to pass, state laws are much easier. Recently, the above scenario of public awareness and passage of a law to govern sow housing has occurred in Florida (November, 2002). Florida passed a state law to prevent sows from being housed in gestation crates. Thus, although national legislation is unlikely in the U.S., in the future we may see a progression of individual states passing legislation to govern how livestock animals are raised or to at least bring farm animal production under the umbrella protection of animal anti-cruelty legislation. Currently, every state has their own anti-cruelty law but many states exempt farm animal production methods which are "Accepted," "Common," "Customary" or "Normal" Farming Practices (Wolfson, 1996).

The scientific standing of animal welfare in the U.S. and Europe

The generation of scientific information to address questions on animal welfare is still progressing. Unsurprisingly, much more animal welfare research has been conducted in the EU as compared to the U.S. and the EU contains by far the largest concentration of animal welfare scientists in the world. However, the number of animal welfare researchers in the U.S. is steadily increasing, albeit still by a need to import foreign expertise. In total, animal welfare research has been much less than the amount of effort spent studying more 'traditional' sciences such as health, nutrition, reproduction, and genetics and there is still a real need to convince Animal Science and Veterinary Medicine departments at U.S. universities, that animal welfare is a scientific specialty in its own right. Conversely, most of the major veterinary departments at EU universities have at least one specialist animal welfare scientist, often at full Professor level. Courses on animal welfare are integrated into veterinary curricula and the non-veterinary teaching of animal welfare is also widespread, with opportunities for specialism in Bachelor's, Master's and Doctorate degree levels.

Within the U.S., we could perhaps identify up to only eleven universities where multi-species teaching and research is being carried out by fully-qualified animal welfare scientists. Purdue University offers a Bachelor's degree in Animal Science with Animal Behavior & Well-being as a focus. Another university is in the process of trying to develop and market an "off-the-shelf" undergraduate course on animal welfare that other universities could purchase and deliver using existing faculty. Although it may be argued that this is raising the profile of animal welfare education, it can also be seen as detracting from animal welfare science as a discipline. Departments should be hiring animal welfare expertise directly, rather than relegating its delivery to a generic animal scientist. There is real interest in undergraduates for taking animal welfare courses, but post-graduate opportunities are relatively few. There seems to be a shortage of home-grown talent wanting to pursue animal welfare research, perhaps in part because of the lack of status that the subject is afforded.

Animal welfare research in the U.S. and Europe

Because the study of animal welfare is relatively new, the information needed to answer many important questions is lacking. Within Europe, much of the research can perhaps be organized into two broad areas; more applied research into animal welfare within novel and sustainable systems; more fundamental research into cognitive processes and emotions. Within the U.S., we are still perhaps focusing effort on research into animal welfare within current livestock systems - research that was carried out in Europe over the last few decades. This immediately begs the question as to whether our current research efforts are worthwhile. Do we need to repeat what has already been done and are European results applicable to the U.S.? To some extent, although from a researcher's point of view, carrying out current systems research is perhaps not very leading edge, the differences between European and U.S. animal agriculture are large enough to warrant a degree of repetition. The biggest difference is scale of operation. Europe does not have single farms with 10,000 sows or 10,000 cows. Can results carried out on small experimental units be directly applicable to farms of this size? The answer is probably not, but it can still provide good indicators of what we might expect. Another factor is the livestock themselves. Is an American sow the same as a European sow, etc.? Certainly the biggest

difference is within the laying hen industries. The European industry almost exclusively uses larger, brown hybrid strains, whereas the U.S. industry uses the smaller White Leghorn.

So, although it can be argued that there is a need for current systems-based research within the U.S., we should not dismiss research done elsewhere as irrelevant. Indeed we should be building on what has been done elsewhere and not just repeat but augment and improve our own studies, using information already published. We should also be taking steps forward to move into the areas already being studied elsewhere. Certainly we should be addressing basic questions such as: How painful are certain production practices?; How much space do livestock need?; What duration of transport is acceptable? However, we still will need to move forward to understand how livestock think and feel. In the future, research aimed at understanding cognitive and emotive aspects of livestock will allow us to more fully understand if livestock are experiencing poor or good welfare. This is a difficult challenge but one that must be met if we are to correctly answer questions as to whether a livestock production system or practice adequately preserves the animals' welfare integrity.

Bridging the gap

The U.S. has to think itself fortunate in terms of looking into the future from an animal welfare perspective. There is a working model for our use across the Atlantic. There should not be any surprises in store for U.S. animal agriculture. We should be learning from the European model and embracing the positive lessons and looking for alternative methods to avoid the negative experiences. A key to this is exchange - exchange of personnel and ideas. Europe undoubtedly has expertise, whereas the U.S. can boast facilities and research support infrastructure. We should be looking for European scientists to spend time in our labs and for U.S. scientists to spend time in European labs. Producer groups and the food industry should be interacting with each other to harmonize voluntary welfare schemes and they should be communicating with similar organizations in Europe to learn from their experiences.

What has become apparent from the European experience is that the animal industries themselves ultimately lack the power to dictate the methods they use. The real power-base lies with the retailer and the retailer to some extent is dictated to by what the consumers want or perhaps what they think the consumers want. Farm animal industries should therefore be aware of the need for flexibility in production methods or even the need for change. If a large cooperative that operated on the world market were to agree to purchase specific animal products that were only produced using certain housing systems, then it would be difficult for the specific animal industry not to adjust. At the international level, we have already witnessed the buying policy of retailers in one country (U.K.), influence the housing of pigs in other countries (Denmark and the Netherlands), in response to perceived consumer preference. Animal industries elsewhere should expect that this could happen again. We should not expend all our energy researching systems that may ultimately be non-sustainable due to public antipathy.

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Bridging the Differences Between Europe and the USA

Industry: Bridging the Differences—Can it be Done?

Kay Johnson
Executive Vice President
Animal Agriculture Alliance

Participating in the OIE Global conference on animal welfare in Paris in February was truly an eye-opening experience. What an incredible opportunity to hear, meet and talk with so many people from so many countries who all have a common interest in animal well-being. We were all there because of this common factor, however, as one would imagine, with more than 150 countries participating, all with diverse people, policies and cultures, the opinions about animal well-being were anything but common.

The majority of participants appeared to believe that it is ethical for humans to use animals, although not everyone. There did not appear to be a majority opinion, however, on all aspects of

what constituted animal well-being or how animal well-being could best be achieved. The opinions on these topics were at least as diverse as the countries that participated. What were the best methods of providing for animal well-being – private industry initiatives? Government regulations or legislation? Animal activist organization efforts? Incentive programs? Local, national or international initiatives or standards? The list could go on and on.

Many of the countries represented at the meeting were developing nations that have so many human concerns that addressing animal welfare concerns may likely be far down their country's list of priorities. However, probably some of the most apparent differences, and one of more immediate concern to the U.S., were the opinions of some representatives from countries within the European Union.

It appeared that many from the EU countries felt that regulation and legislation were the only means to achieving animal well-being, and that all countries should implement the same production practices they've chosen or have been forced to implement, implicitly implying that any different approaches were or are inferior. While some of the U.S. participants from activist organizations also support regulation or legislation of animal welfare practices (or even the abolition altogether of the use of animals), the U.S. agriculture industry does not. Perhaps the producers in the EU did not support regulation of animal welfare there, but now it is a fact of life they must comply with regulations and therefore they believe all the worlds' farmers should be held to the same standards – regardless of whether other ways may achieve the same or possibly even greater results in the area of animal welfare.

Given all of these and so many other differences including population size, economic status, land and other resource availability, how can we create that bridge at an international level to establish mutually agreed upon guidelines to serve as the standard of reference for all countries in addressing animal welfare issues?

While I am by no means experienced in trade relations or negotiations, I will share my personal thoughts on how to start building that bridge.

First, we must recognize there is more than one way to accomplish our common goal to improve animal well-being.

Second, science should be the basis for all guidelines or standards. While some want to recognize other factors in establishing guidelines, the fact remains that sound science provides the basis for objectivity whereas so many other factors are subject to our own personal life experiences, perceptions and cultural filters.

Third, we must respect our differences. The policies and systems that work for some countries do not work for all. The citizens of some countries support regulation of essentially everything and that is how they feel their societies best function. Others of us do not. Some of us rely on science, innovation, creativity, market incentives, and other factors to constantly strive to improve everything we do while rejecting the heavy hand of more government regulation. While we seek to accomplish the same goal, often greater results are achieved through innovation driven by positive motivation than by establishing a single standard. Imposed standards may become a maximum level of well-being rather than a minimum because innovation may be thwarted. International guidelines should be general enough to allow for the cultural and policy differences of so many different countries.

One OIE participant proclaimed, (quote) “we can export our conscience” (end quote) by banning all animal products that are not produced by our standards. This statement does not indicate respect for others or show any desire for creativity and improvement. My organization considers that statement arrogant and counter productive to facilitating a meaningful discussion.

Fourth, we should all work toward improving animal welfare through more research and education and NOT push to make animal welfare an international trade issue. More research must be done in the study of animal welfare. The resulting information should be made available for all to use and reference in establishing the methodologies and systems that work best for each country. We must recognize that science is constantly evolving and as we learn more about animals, the science behind animal welfare will also evolve.

While there are market and economic realities associated with regulations and the requirement (or choice) to implement particular production practices, the diversity of different systems and different products also provides consumers with more choices.

Lastly, we must continue to strive to communicate with one another rather than making demands or assumptions. We need to engage one another in productive discussions about animal well-being, as well as our countries’ policies, systems and resources. We must also discuss how changes in animal production practices will impact other important factors such as our environments, economies and the health and well-being of the people of each country. If we respect the fact that we are all striving to improve animal welfare and that it can be achieved by different means, we can learn from one another and maintain that bridge of communications with one another.

The Animal Agriculture Alliance strives to bring all stakeholders in the U.S. animal agriculture and food industries together to discuss and understand animal well-being concerns rather than making it a competitive issue. We work to provide unified programs to share information and to promote and improve animal well-being while also educating the public about the importance of this industry. We feel the same is achievable on an international basis and commit to doing our part to achieve that goal.

Bridging Differences Between Europe and the USA

International Research

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There are many differences between Europe and the USA that contribute to their views on and approaches to humane care of food animals. These include the political differences of states within a federal system, and of countries within a community. Much of the USA could be said to have a rural ethic that is quite different from that in Europe. And trade issues are quite different when your largest market is internal rather than export. All of these have impacted how animal welfare has developed within the two global regions.

Whatever the cause, the greatest difference that I perceive between Europe and the USA in terms of food animal welfare is the general acceptance of the concept in Europe. This of course implies that I do not perceive a wide acceptance of food animal welfare within the USA. Whether it is the agricultural sector, marketing chains, the consumer, government bodies, or academia, food animal welfare is accepted as a valid societal issue in Europe. This does not imply that there is uniformity among sectors or countries in Europe, but there is a basic acceptance of the issue.

I would suggest that within the USA there is not a perceived need for consensus on food animal welfare. My experience within the USA has been in academia, as a faculty member in a large animal science department. Although we see an increasing number of departments offering courses in animal welfare, the proportion of departments doing so remains far below that in Europe. A growing trend within Europe is for smaller agricultural colleges to be hiring faculty with a background in animal welfare. The same could be said for research centers. The USDA has identified one center as their key welfare thrust, with minor programs elsewhere. Many of the countries within Europe could say the same, even though they are much smaller in population or agricultural production.

Bridging the gap between Europe and the USA has started. USA faculty and graduate students now regularly attend congresses of the International Society for Applied Ethology, which includes many welfare oriented presentations, whereas this was virtually unheard of 20 years ago. USA faculty members and scientists are taking more and more leadership within that society as well. The proportion of departments with welfare faculty is increasing. And I believe most importantly, undergraduates students, who will provide leadership to our industries in the future, are taking courses in animal welfare.

APPENDIX A

AGENDA and SPEAKER CONTACT INFORMATION

LOCAL AND GLOBAL CONSIDERATIONS IN ANIMAL AGRICULTURE: THE BIG PICTURE

Jefferson Auditorium, South Agriculture Building,
Washington, DC

September 22, 2004

Moderator: **Richard Reynnells**
USDA/CSREES/PAS
800 9th Street SW, Room 3130 Waterfront Centre
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T#: 202.401.5352
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8:30 – 8:35

Welcome

Richard Reynnells, USDA/CSREES/PAS, Washington, DC

- 8:35 - 8:45 **Introduction**
- James Moseley**, Deputy Secretary
United States Department of Agriculture
Washington, DC
- 8:45 - 10:15 **Panel: Trade and Growth of Animal Agriculture in the World**
- 8:45 - 9:10 **Overview: Social and Global Trends in Meat Production**
- Cees de Haan**, Rural Development Department **Invited**
The World Bank
1818 H Street, NW
Washington, DC 20433 USA
T#: 202.473.0347
F#: 202.522.3308
email: cdehaan@worldbank.org
- 9:10 - 9:25 **International Competition: The China Model**
- David Brubaker**, Agri-business Consultant
145 South Spruce Street
Lititz, PA 17543
T#: 717.627.0410
F#: 717.627.1847
email: PennsylvaniaB@aol.com
- 9:25 - 9:40 **Local or International Food Sources: Energy and Agriculture and a
Call for Greater Scrutiny**
- Martin Ogle**, Consumer
2860 Marcey Road
Arlington, VA 22207
T#: 703.528.5406
F#: 703.528.0750
email: martinogle@hotmail.com
- 9:40 - 10:15 **Discussion**
- 10:15 - 10:30 **BREAK**
- 10:30 - 11:15 **Panel: Farm Types and Production Systems: Can Small and Medium
Sized Farms Survive?**
- 10:30 - 10:45 **Industry Perspective**
Renee Lloyd, Director of Production Systems, and

Gary Weber, Executive Director, Regulatory Affairs
National Cattlemen's Beef Association
9110 East Nichols Avenue Suite 300
Centennial, Colorado 80112
T#: 303.694.0305
F#: 303.694.2851
email: rlloyd@beef.org

10:45 - 11:00

Niche Market Perspective

Steve Washburn

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Center for Environmental Farming Systems
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T#: 919.515.7726
F#: 919.515.2152
email: steve_washburn@ncsu.edu

11:00 - 11:15

Discussion

11:15 - 11:45

Animal Rights, Animal Welfare, and Animal Well-Being: How to Communicate with the Outside World

Paul Thompson

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Michigan State University
East Lansing, Michigan 48824-1032
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11:45 - 12:45 **LUNCH**

Moderator:

David Brubaker, Agri-business Consultant

12:45 - 2:45

Panel: Views on the Humane Treatment of Food Animals

12:45 - 1:00

Applied Ethicist; The Well-being of Farm Animals: Exploring the Intersection Between Values and Technology

Ray Anthony

Department of Philosophy and Religious Studies
036 Catt Hall

Iowa State University
Ames, Iowa 50011
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email: ranthon1@iastate.edu

1:00 - 1:15

Animal Rights and Human Responsibility

Gene Bauston
Farm Sanctuary
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F#: 607.583.2041
email: gene@farmsanctuary.org

1:15 - 1:30

Animal Protection

Michael Appleby, Vice President
Farm Animals and Sustainable Agriculture
The Humane Society of the United States
2100 L Street, NW
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T#: 301.258.3111
F#: 301.258.3081
email: mappleby@hsus.org

1:30 - 1:45

Industry; Evolution of Poultry Husbandry Programs and Practices

Bruce Stewart-Brown, Vice President
Food Safety and Quality
Perdue Farms, Inc.
PO Box 1537
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T#: 410.543.3309
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email: bruce.stewart-brown@perdue.com

1:45 - 2:00

Research/Ethology; A Scientific Perspective

Harold Gonyou
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Canada
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F#: 306.955.2510
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- 2:00 - 2:45 Discussion
- 2:45 - 3:00 **BREAK**
- 3:00 - 4:00 **Panel: Bridging Differences Between Europe and the USA**
- 3:00 - 3:15 **Research**
Jeremy Marchant-Forde, and Donald Lay
USDA-ARS, Livestock Behavior Research Unit
Purdue University
125 Russell Street
West Lafayette, Indiana 47907
T#: 765.494.6358
F#: 765.496.1993
email: marchant@purdue.edu
- 3:15 - 3:30 **Industry: Bridging the Differences—Can it be Done?**
Kay Johnson, Executive Vice President
Animal Agriculture Alliance
1501 Wilson Boulevard, Suite 1100
Arlington, Virginia 22209
T#: 703.562.5160
F#: 703.524.1921
email: kjohnson@animalagalliance.org
- 3:30 - 3:45 **International Research**
Harold Gonyou
- 3:45 - 4:00 Discussion