Application of the ethical matrix in evaluation of the question of downer cattle transport

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Abstract

The ethical matrix is a bioethical methodology which can be used to evaluate complicated public policy decisions involving agriculture and food production. Originally designed for biomedical application the method has been applied more widely by democratic governments attempting to reflect the sensibilities of a pluralistic society in response to a desire for a more integrated, transparent and comprehensive approach to develop policy and regulator decisions. The question of transporting non-ambulatory cattle is examined as a case study to illustrate the use of the ethical matrix in evaluating public policy decision making in livestock production.

Introduction

The term ‘downer cattle’ refers to cattle, usually cows that are suffering from assorted maladies, such as mastitis, central nervous system disease, peripheral nerve disorders such as obturator nerve compression paralysis, metabolic disturbances such as hypocalcemia or ketosis, and/or musculoskeletal injuries which render them unable or unwilling to stand up from the recumbent position (Byrne et 2003).

Downer cattle are a significant concern in beef production in North America as a meat quality concern (Roeber 2001) and as a disease control risk (Fed Reg, 2003). Prevalence of downers can be tracked through slaughterhouse records. The 1999 National Market Cow and Bull Audit (USA) conducted at 21 cow slaughter plants indicated that the percentage of downer non-ambulatory dairy cows has increased compared to a similar audit conducted in 1994 (NCPA 1999a). Over the five year period dairy cow downers increased from 1.1% to 1.5%. Severe lameness in cull dairy cows has increased from 4.7% of the cows to 14.5%. The 1999 audit showed that the percentage of cull beef cows that arrived at a slaughter plant as downers was reduced in 1999 to 0.7% from 1.0% in 1994. In this audit directed to the evaluation of beef

quality, of the ten major concerns ranked, downer dairy cattle was ranked as the third most important quality defect while downer beef cattle was ranked 8th (Roeber 2001).

Lameness and disabled cattle cause economic losses to both the dairy and beef industry. In the 1999 NCPA Audit, 14.5% of cows (beef and dairy combined) were identified as lame and 1.5% was identified as downers. In this study, the economic impact of downers was calculated only as the cost of additional handling which was $0.56 out of a total market loss of $68.82 for all quality defects (NCPA 1999). Bruising and condemnations associated with being downers was not included in the estimated cost of downers. From 1999-2001, 5,434 downer cattle were presented to US slaughter facilities, and 1,456 (27%) were condemned (Farm Sanctuary, 2001).

Laws prohibiting or regulations controlling the transportation of downer or non-ambulatory livestock are in force or under consideration in many jurisdictions in North America (Doonan *et al.*, 2003). In Ontario for example, downer animals may be transported under veterinary certification (Ontario Reg. 372/94). This law is in general agreement with, and pre-dates the Canadian Veterinary Medical Association animal welfare position statement (CVMA 2000). Recently the veterinary profession in Canada has been challenged to re-evaluate this normative position and come to a consensus on the ethical considerations inherent in the practice of transporting non-ambulatory livestock with a view to modification to national regulatory standards (Doonan *et al.*, 2003, CFIA 2003).

The formulation of laws is a complex social phenomenon and one of the most intricate aspects of human culture. Law, is also a normative social practice: it purports to guide human behavior, giving rise to reasons for action. The task of justification of a law concerns the elucidation of the reasons people *ought* to have for acknowledging law's normative aspect. In other words, a process is required to critically review and to explain the moral legitimacy of law (Mamor 2001).

The role of ethical analysis is to translate often abstract ethical theory into forms in which it might inform practical decision making. In considering the possible prohibition of the transporting of downer cattle to slaughter, the question remains ‘Does there exist a reasonable decision procedure which is sufficiently strong to determine the manner in which competing interests could be adjudicated, and, in instances of conflict, one interest be given preference over another; and further, can the existence of this procedure, as well as its reasonableness, be

established by rational methods of inquiry?' (Rawls, 1951, pp.177).

To deal with ethical issues it is important to recognize that moral decisions are arrived at within a frame of reference. Frames of reference are influenced by the following factors: (Te Velde *et al.*, 2002).

1. Convictions (opinions about 'the way things are' assumptions that are taken for granted)
2. Values (opinions about the way things should be)
3. Norms (the translations of these values into rules of conduct)
4. Knowledge (constructed from experiences, facts, stories, and impressions)
5. Interests (economic, social, and moral interests)

Individual's opinions of what is right or wrong, are the result of an unconscious process of tuning these aspects of the frame of reference and using that frame of reference in deciding on a moral course of action.

Common morality theory takes its basic premises from the morality shared by the members of a society B that is, unphilosophical common sense and tradition (Beauchamp and Childress, 1994). Canadian common morality about 'the way things are' probably includes the convictions that: animals are meant to serve the interests of people, meat is a key element in the human diet and the practice of farming to generate food for human consumption is a valuable contribution to society. Evidence in support of this common morality is that it describes the current practices of livestock production and human food choices in Canada.

The purpose of this paper is to examine the ethical matrix construct (Mepham 1996, 2000a, 2000b) as a potential tool in evaluating if a prohibition on the transportation of downer cattle can be morally justified. The specific question to be examined is; what shall we (society, the veterinary profession, the farmer, the livestock transporter, and the slaughterhouse staff and management) do to maintain the moral integrity of the livestock and human food from animal sources production chain when: a bovine is identified as unable to walk?

Competent Moral Judge

Inherent in the application of the ethical matrix is the concept of a competent moral judge who should combine the following characteristics; normal intelligence, reasonable knowledge of

world affairs, the capacity to 'reason', i.e. incorporate new information and can view a situation while remaining aware of the influence of their personal bias, and the ability to imagine and appreciate the predicaments of other individuals (Rawls 1951). To some extent, as the matrix is intended to drive public policy toward a consensus, where possible the agents of concern are asked to fulfill the duties of a moral judge (Mepham 2000b).

Matrix Construction

The challenge in dealing with emotive ethical issues is that diverse individuals will not initially be in agreement of what is morally the correct action. If as a profession and as a society we are motivated to sneak up on a consensus, several prerequisites are apparent. Firstly we must harbour the belief that agreement is possible and that a process is needed to get from disagreement to agreement. That is, the assertion that through careful open examination of the question it is possible to win free and willing allegiance to the process and be able to implement a gradual convergence of un-coerced opinion is a prerequisite for identifying such a process (Rawls 1951 pp. 186,187).

The ethical matrix is a general approach to complicated decisions involving agriculture and food production that recognizes our responsibility to have respect for; that is to give fair and equitable consideration to all agents deserving of respect. This process formerly applied in the arena of medical decision making by Beauchamp and Childress (1994) used the ethical principals of beneficence, non-maleficence, autonomy and justice. In many subsequent applications the ethical principals have been modified by combining the principals of beneficence and non-maleficence into respect for well-being (FEC 2001, Mepham 1996, 2000a, 2000b, Kaiser 2001). The ethical matrix creates a formal structure for identification of the parties (agents) worthy of respect and for analysis of the reasons why they are worthy of respect. It formally identifies the complexity of all ethical decisions relating to life forms so avoids the fallacy of the single-issue argument (Fraser 1999) (Table 1). The principal aim of the matrix is to facilitate rational public policy decision-making by articulating the ethical dimensions of any issue in a transparent and broadly comprehensible manner (Mepham 2000a).

Table 1. The Ethical Matrix

Respect for:	Wellbeing *(health & welfare)*	Autonomy -Dignity *(freedom/choice)*	Justice *(fairness)*
Treated organism	Animal Welfare	Behavioral Freedom	*Telos*, Intrinsic value, Entitlement to Care
Producer	Property Interest	Freedom to use, Respect for Farming Culture	Fair treatment in trade and law, Duty of Care
Consumer	Availability of Safe Food	Choice and labeling	Affordability of food
Non-Consumer (Citizen)	Value of Opinion	Protection of Interest	Exercise of democratic Responsibility
Living environment	Conservation	Biodiversity	Sustainability of Populations

In this application of the ethical matrix to the question of transporting downer cattle, respect (agent status) was assigned to farmers, consumers, and the living environment as previously modeled (FEC 2001, Kaiser 2001). In addition the status of agent is also given to the animal(s) and non-consumers of meat products as separate groups. An agent is awarded respect or consideration in relation to three ethical principles;

Well-being: When applied to the individual agent it simply refers to the question of whether the agent is harmed or benefits from the course of action. In evaluation of the whole matrix it incorporates a utilitarian respect for the principle of the greatest good (and least harm), for the greatest number of all concerned parties.

Autonomy: a modification of Kantian philosophy related to respect for the rights of each individual, e.g. to freedom of choice.

Justice: an application of contemporary philosopher John Rawls (1921-2002), considering respect for the principle of fairness and justice to all. Justice is the first virtue of social institutions as truth is to systems of thought (Rawls 1972).

Using the above principals, and taking a Congregationalist approach to democratic decision making, there is a need to decide who is in the congregation. In the ethical matrix construct, congregation members are referred to as agents worthy of respect.

Agents Worthy of Respect

Treated Organism

Justification of Agent Status - The involuntary recumbent animal is the lead or at minimum, a significant agent of concern in considering the question of downer cattle. This assertion is in partial agreement with the philosophical arguments of Singer (1990) and Regan (1983) but is in conflict with the opinion of Kant who asserted that we have no immediate duties to animals; our duties to animals are indirect duties to people (Kant 1784-5). Assigning the animal respect or status of agent within the Ethical Matrix does not equate to 'equal consideration' proposed by Singer or 'rights' as argued by Regan. Not considering the animal as a valid agent deserving of respect with the matrix would be inconsistent with contemporary western culture (Fraser 1999).

Wellbeing - Animal wellbeing may be negatively affected by pain and or injury, both commonly associated with non-ambulatory states and presumably the recumbency mitigates the severity of the pain or injury. Suffering may also result when an animal fails to cope with stress, or is prevented by the injury or incapacity from taking any constructive action it would take under normal conditions to relieve the stress (Speer *et al.*, 2001). Herd animals are highly motivated to return to the comfort of the group especially when in novel surroundings. The downer animal is unable to respond to that motivation. In examination of the stress of isolation it is reasonable to suggest that ongoing harm is being done to a herd animal when unable to walk, is left alone without the proximity of others of the same species. It is interesting to note that the veterinary profession uses a human term "separation anxiety" (Foley *et al.*, 2004) to define a treatable condition in dogs when separated from human companionship (Schwartz 2003) however, this term is not to my knowledge used to identify the motivation for ungulates to return to the herd.

Novel situations of themselves are known to be highly stressful to livestock and may result in general fearfulness (Hemsworth 1993). There is little doubt that the state of being a downer is novel, and recumbency often occurs in the transport system, a novel environment, which may combine to generate negative welfare implications for the individual animal affected.

Autonomy - Autonomy implies that we should respect that animals normally have the freedom to go where they will within the confines of production systems and freedom to display normal behavior (Webster 2001). Ambulatory animals have the freedom to flee to the far side of the enclosure when approached or approach and eat from the feed source or drink from the water

bowl. This autonomy is denied to the downer animal.

Some ethicists and scientists considering ethical issues have argued it is necessary to recognize the *telos*, i.e. the fundamental biological and psychological essence of any animal (Webster 2001, Frazer 1999). Aristotle's conception of telos included a full flourishing stage of an animal's existence and the fulfillment of the animals intended use (Fraser 1999). Telos when applied from the perspective of the animal shares many qualities with the concept of intrinsic value or intrinsic worth which when applied to people has paramount importance. In Kant's terms each of us '*is an end in himself,'* and has '*an intrinsic worth, that is, dignity,'* which is incumbent on us to respect in all other human beings. An animal in the state of involuntary recumbency, where it is unable to maintain a normal level of hygiene and independence is not being afforded the expected level of dignity.

Justice - In Canada the regulatory provisions to assure humane slaughter are incorporated into the Meat Inspection Act (SOC 1985). In general the regulation requires slaughterhouse personnel to treat every animal destined for slaughter in a calm non-threatening way, provide the necessities of life and to deliver humane killing without fear or pain. Specifically Section 65 states 'Every food animal in a holding pen awaiting slaughter shall be provided with access to potable water and shall, if held for more than 24 hours, be provided with feed'. In most abattoir situations it would be difficult to consistently treat downer cattle in the same way as ambulatory cattle and to assure access to the provisions for welfare assured by the Meat Inspection Act. Therefore there is a lack of fairness and justice in the application of the humane provisions of the Meat Inspection Act to downer cattle.

The Producer

Justification of Agent Status - In addition to the animal, the producer is a major agent of concern in this issue. Under common law, animals are property and have an extrinsic monetary value in addition to the intrinsic value we assign to them. For most practical purposes animals are trade commodities in a free market to be used as the producer considers appropriate (McInerney 1998).

Wellbeing - The major concern to the producer if downer transport is prohibited is the financial loss of the carcass value of downer cattle. The magnitude of financial cost to the

consumer or citizen related to the options of how to treat non-ambulatory animals is trivial in relation to the direct financial cost to the owner of the individual animal. In general, substantial improvements in animal welfare are possible with only trivial increased in consumer costs, as farm gate value is a small and continually eroding fraction of consumer product value (Webster 2001). Changes in production methods to improve animal welfare have a disproportionate fiscal impact resulting in producer penalty. It is estimated that a small increase in production costs for example in the Netherlands increasing the floor space allowance for feeder pigs from 0.7 to 0.8 m^2, increased the production cost by only 1% but reduced farm income by 45% (Bornett *et al.,* 2003).

Prohibition of downer transport may provide long term financial benefit to the producer in sustaining the value of cull cattle in general, although this benefit is uncertain. Public perception of food safety risk associated with the processing of downer cattle could negatively affect the purchase patterns of consumers, therefore the value of beef products that include meat from (cull) downer cattle (Böcker and Hanf 2000).

In Germany, bovine spongiform encephalopathy (BSE) prevalence was strongly associated with downer cattle (EC-FVO 2001). In December 2003, the United States Department of Agriculture banned downer cattle from entering the food chain based on this "public health" (consumer) risk. Earlier the same year, regulations were introduced to assure the humane treatment of downer livestock being salvaged for human consumption (Anon 2003). Although the justification for the US food chain prohibition given was to protect the American public from the risk of BSE, a much more compelling argument could me made that the decision was in response to market activity. Between the announcement of BSE in Washington State on December 23 and this announcement on Dec 30 cattle prices had plunged 27.4% on the Chicago Mercantile Exchange.

Autonomy - Regulation in an area of economic activity reduces the freedom of the agents involved and may offend the convictions of the individuals involved. Livestock farmers consider it the purpose, or the natural order of things, for livestock at the end of their productive life to be sent for slaughter and for the salvage of meat for human consumption (Te Velde *et al.,* 2001).

A related expression of this producer norm is provided by producer behavior in disease eradication programs in Europe. In April 1997 in the Netherlands CSF outbreak as the volume of

suspect pig meat was exceeding the rendering capacity of the country. Because this problem could be alleviated to some extent by buying-out piglets shortly after birth instead of at a weight of 25 kg, a scheme for buying-out 3 to 17-day-old piglets was introduced in May. Veterinarians killed these young piglets on the farm by lethal injection. Participation in this operation was in theory on a voluntary basis, but farmers who declined to participate were not allowed to sell piglets of 25 kg to the buying-out scheme at a later date. Although the compensation was generous, farmers and farming organizations strongly opposed this arrangement on welfare and but primarily moral grounds. Within the culture of livestock production, it was simply considered abhorrent to kill neonatal pigs. Under the circumstances farmers co-operated during the epidemic. This scheme was stopped in October 1997 and was only used in exceptional cases (Pulimers *et al.*, 1999). This example demonstrated that the government officers paying farmers for the objective market value of their livestock was not sufficient to buy the farmers approval to kill neonatal pigs.

It is an offense to the nature of farming to waste animals and animal products that could be used for human consumption. The general public shares this conviction when healthy animals are killed and destroyed consequential to disease eradication programs (Curry 2002, deKlerk 2002, Anon 2001). It may be considered immoral within the context of livestock production to not exercise all *reasonable* options to salvage food for human consumption. Respect for *the nature of livestock production* requires that humans eat the products of production and consumers participate in this respect. This motivation of conservation for the purposes of consumption operates as a producer motivator independently of the financial value of the product salvaged. However, what are ‘reasonable’ norms or rules of conduct must be balanced within a complete framework of common morality.

Justice - Imposing conditions on the producer and restricting his/her freedom to transport and sell property will result in financial costs that are very unevenly distributed between the agents concerned in the issue. Farmers share a disproportionate cost related to the implementation of welfare regulations. The implementation of welfare standards in swine production in Britain prior to equivalent standards in the rest of the European Community has been credited with the recent significant downturn in British pork production (Penny and Guise 2000, Bornett *et al.*, 2003).

Equality in application of a food regulation within a trading community is a separate threat to justice. Almost any initiative in animal welfare will increase production costs and the maintenance of a level playing field for a freely traded product is a major concern (Kanis *et al.*, 2003). If it is illegal to salvage non-ambulatory animals in one part of a geographically interrelated and fiscally competitive production system it is only fair to be illegal in all parts. Enforcement must be equivalent so to not disadvantage some producers in relation to others.

The Consumer

Justification of Agent Status - In a large European study, including a telephone survey of 2500 consumers in five EU member states, Harper and Henson (2001) conclude that consumers seem to use animal welfare as a proxy indicator for those product qualities that might have a negative effect on themselves, such as food safety, healthiness, and quality. Accordingly, consumers were concerned about conditions of animal welfare due to the impact on human health more than they were concerned due to the impact on the animal's well being.

Wellbeing - If the primary concern by the consumer is the safety of the food supply then there is some serious non-animal welfare consumer concerns related to the salvaging of product from non-ambulatory animals for human consumption. It is fairly well documented that the non-ambulatory dairy cow is at an increased risk for shedding *E. coli* O157:H7 (Byrne *et al.*, 2003) and the cull dairy cow has been incriminated as being second only to veal calves as to risk for having antibiotic residue in muscle tissue (Paige *et al.*, 1999). In addition, fecal contamination of the skin as would be expected in an animal recumbent on the way to slaughter is an additional food safety risk (McEvoy *et al.*, 2000). In ambulatory cull cattle diary cows exhibited more ($P < 0.05\%$) hide contamination than beef cows (Roeber *et al.*, 2001).

At the current prevalence of BSE in North America the zoonotic risk is not considered relevant to consumer food safety only to consumer perception of food safety. That concern is captured in the producer well being box.

Autonomy - Currently there is no method of labeling the product derived from non-ambulatory animals as different from regular meat products. An informed consumer would be aware that 'lean' ground beef of necessity must be derived primarily from cull dairy cows (Roeber *et al.*, 2001), which is a proxy measure for microbiological and drug residue risks. The consumer is unable at present to exercise a full right of choice to not choose meat from downer

animals, as the supporting information is not available.

Hypothetically, one may expect consumers to notice and alter purchase patterns if a disclaimer *'this food product may contain tissue from animals unable to stand at the time of slaughter'* were applied to all processed and some primal cut meat products. An argument has been made that this type statement although honest and transparent does not directly and sufficiently relate to food safety and quality which currently drives the parameters of labeling foods. However, in this ethical analysis wellbeing (food safety) considerations are separate from respect for the consumer autonomy. The current practice of labeling food products strictly on the basis of trademark, nutrition and food safety is in itself an ethical decision and negates the desire for autonomy of some consumers. Consumer right to know is a compelling argument, even if the "knowledge" is of no objective benefit to the consumer.

The government of Canada has articulated some norms of conduct in relation to food production. A good food production system should be committed to honesty and transparency and the consumer has some right to essential information relevant to quality and safety which is meaningful to them. The Agriculture Policy Framework states *the Government of Canada is committed to ensuring that food produced in Canada continues to be among the safest and highest-quality in the world. Canada is putting in place national, seamless food safety systems on the farm and throughout the agri-food chain - from the field to the fork.* (AAFC 2004).

Justice - If there is enhanced regulatory intervention in non-ambulatory animals, there may be a threat to justice based on differing social economic standing of Canadians. Based on studies of willingness to pay, affluent social groups may benefit more from obligatory animal welfare regulatory initiatives than the poor (Bennett and Blaney 2003). There is a potential risk that low-income segments of society would be disproportional affected by new regulatory and enforcement initiatives which increase the cost of consumer goods; however, it is unlikely to be a significant issue in the non-ambulatory animal question. Thus far, all information provided by expert opinion and non-peer reviewed statistics indicates that non-ambulatory animals contribute less than 1% of the final product for human consumption. In addition product salvaged from non-ambulatory animals falls into the category of processing meat which is a readily assessable and cheap product on the word market which and boneless processing beef has been steadily decreasing in real value the past 10 years (Brunke 2002). On May 16, 2003 manufacturing beef from Australia/New Zealand, 85% lean frozen trim sold for $112.95/cwt (CanFax).

The volume of product in the food chain that is derived from downer cattle is probably irrelevant to the final cost of product to the Canadian consumer. This situation where improved farm animal welfare has minimal effect on consumer product availability and cost is common to many farm animal welfare questions (Webster 2001).

The Non-Consumer

Justification of Agent Status - Some investigations into societal concerns related to animal welfare have separated out the consumer concerns from the citizen concerns (Bennett 1995). In this application, the strict vegetarian; i.e., one who consumes no animal or dairy products of any type is considered deserving of respect as animal welfare concerns go beyond consumer concerns and are valid concerns to persons in their role as citizen (Kanis *et al.,* 2003). Citizen concerns are concerns unrelated to whether the individual purchases or uses animal products. As a participant in a democratic society the non-consumer must be considered as deserving of respect in some aspects of farm animal production such as the protection of the environment and animal welfare.

Wellbeing - In analysing reaction to animal use, both consumer and citizen motivation and behavior share many of the same processes. The *Dictionary of Psychology* (Penguin Books, London) defines cognitive dissonance as 'an emotional state set up when two simultaneously held attitudes or beliefs are inconsistent or when there is a conflict between belief and overt behaviour'. The concept first used by psychologists is also widely used in a marketing context in relation to consumer behaviour (Bennett 1995). Consumers of animal products may feel 'cognitive dissonance' associated with their consumption of a livestock product over concern with how modern livestock production is conducted (McEachern and Schroeder 2002). Other authors may refer to this as ambivalence (Te Velde *et al,* 2002). Non-consumers of animal products (vegan consumers) may suffer injury (more than ambivalence) from the knowledge that other members of their society are engaged in production systems that they consider inhumane. The fact that in some cases the perception may be the result of a poorly informed conviction does not change the reality of the perception thus the real injury.

Autonomy - As both consumers and citizens participate in the political life of a nation, policy makers in the future may adopt measures to ensure that livestock's production systems change to maximize the net benefit to society as a whole not just to producers and consumers

(Bennett 1995). Much of this thinking is evident in the current consultation related to animal cruelty and amendments proposed to the Canadian Criminal Code (Bill C-10B, Crook 2003). A widely accepted position in popular animal ethics is that many animals share morally relevant features with humans that justify assigning 'moral status' to them. If entities have moral status, humans may not treat them in just any way they like. They then are members of the moral community, which implies that humans whether or not they consume products of animal origin have direct duties to them (Musschenga 2003). It is the choice of individuals in a democracy to exercise their convictions in any legal venue available. In democracy, one group, the more influential, may exercise their autonomy by restricting the activities or autonomy of another group.

Justice - In Canadian society there is a broad consensus that the fate of animals should not completely depend on the contingent and changing interests and preferences of man. The moral indignation about the abuse and maltreatment of animals has led to developing the view that cruelty by humans against animals constitutes an offence against their own humanity. Justice in a free and democratic society may require the interests of the citizen be considered at least on par with the interests of the consumer.

Environment/Biodiversity

Justification of Agent Status - In application of the Ethical Matrix to biotechnology and food production the environment is given agent status largely, because it has been ignored in the past and may not otherwise have an articulate representative.

Wellbeing - Carcass disposal is a valid environmental concern of farmers and the general public when animals can not enter the usual disposal channels. Carcass disposal has been a major environmental concern in the case of foreign animal disease eradication (Scudmore *et al.*, 2002, deKlerk 2002).

Autonomy - Biodiversity is not severely affected by the decision to process a carcass through a meat plant vs disposal through landfill. The environmental burden is a combination of the carcass meat itself and the packaging used to distribute meat to the consumer. In a prohibition of downer transport market, the most negative environmental impact would be disposal of downers by burial on farm (no alternative use). What is the incremental environmental load

between that scenario and the present?

Much of the current volume of material in the processing of meat for consumption by humans, carcass parts such as bones and packaging will directly contribute to landfill either way. Under both situations meat consumed by humans will in due course contribute to the burden of sewage treatment. If the carcass is not consumed by humans then other foodstuffs and their associated packaging will be substituted and the environmental burden of food packaging will not decrease.

Justice - Environmental concerns are not a special concern in relation to the disposal of non-ambulatory animals that differs significantly from the economic concerns previously mentioned.

Environmental protection related to human activity in general is assured and in part paid for by the state. If the meat product of a suitable downer cow were to go to human consumption the volume represented by that fraction would, in time, be processed by the sanitary sewer system operated by a public utility. Therefore the common morality already considers some aspect of carcass disposal as public good and a shared cost under the public utility umbrella. Under a transport prohibition that cost is reverted totally to the producer which is an injustice. Geographic regions unable or unwilling to commit to participating publicly to some extent in the disposal of by-products of livestock production would signal that livestock production is not sustainable in that region.

Ethical Judgment

The ethical matrix is an artificial construct intended to assist in organizing the thought process around making a moral judgment. The test of a well constructed ethical matrix is when a new argument related to the question emerges it will fit somewhere within the matrix and be balanced by all the previous arguments and opinions vying for supremacy. Unfortunately the exercise does not apply any weighting to the competing interests it only identifies and artriculates them. Moral judgment remains the responsibility of the free will agent, the job of the competent moral judge.

The boundaries between acceptable and unacceptable livestock production practices on animal welfare grounds depend on the goods produced, the perceived availability of alternate

production systems or the availability of alternate goods to consume (Bennett 1995). In situations where there is conflict between the (financial) self-interest of individuals and the general good of society, public policy is developed through fair and representative consultation with societal spokespersons and legislation is developed to arbitrate the matter where necessary. In situations where there is significant risk of public injury and extremely small benefits, behavior is prohibited (eg. impaired driving). Where there is both beneficiaries and potential injury to the non-participant the behavior is controlled or licensed (eg. responsible motor vehicle operation).

In 2000 the National Cattlemen's Beef Association (USA) developed a Quality Assurance Marketing Code of Ethics for use by cattlemen, dairymen and packers which included the statement to only participate in marketing cattle that are not disabled and to humanely euthanize cattle when necessary to prevent suffering and protect public health (NCPA 2000b). At the time of the BSE incidents over 2 years later downer cattle were still being delivered to federal slaughter plants in the USA and Canada.

A recent study of farmer and consumer opinion (Te Velde *et al.*, 2002) resulted in the conclusion that a public debate could enhance the development of norms about what is acceptable and what is not acceptable in livestock production. In economic analysis of livestock production systems the 'societal animal welfare cost' is a negative externality, a classic free good which is exploited by production systems with the cost being borne by society. An example of a classic "Free Good" is the good provided to a chemical factory when there is no restriction on the volume or type of material they can release into the environment (Bennett 1995). Not surprisingly, related research indicates that over 50% of citizens questioned responded that the government bears the main responsibility for promoting animal friendly husbandry (Phan-Hyy & Fawaz, 2003).

Farm animal welfare is a significant issue of concern for society and the current economic structure of agriculture is insufficient to address it. Te Velde *et al.*, asserts that there is a consumer-producer tacit pact of *collective non-responsibility* characterized by consumers not seeking more information on animal welfare in productions systems as it may make them uncomfortable (cognitive dissonance) while farmers use the apparent lack of concern from the general consumer as proof that the present system is acceptable. Furthermore, it may be inappropriate to place the responsibility for the protection of animals on individual customers at the point of sale, when they have other priorities to juggle (Appleby *et al.*, 2003).

The recent discussions around amendments to the Criminal Code supports the assertion that in Canada, animal welfare is a public concern and the regulation of human behavior in relation to animals is a justified activity of government and the courts (Bill C-10b).

There is currently an absence of objective knowledge as to the level of suffering experienced by downer animals. This may be partially explained by the downer animal being precluded from displaying the expected objectively measurable behavioral manifestations of discomfort by the physical restraint of recumbency. Flailing and moaning when injured and recumbent probably manifest negative evolutionary pressure in ungulate (prey) species and this tendency to suffer in silence should be recognized by veterinarians and producers.

Estimating the financial cost/loss to the producer is relatively simple in comparison to

estimating the cost/risk taken by the consumer and the emotive injury potentially experienced by the concerned citizens inherent in current actions taken to minimize the producer loss. Thus concentrating efforts on 'cost' may not be fair or relevant and certainly not sufficient to the overall decision process. In consideration of the ethical matrix, societal and individual interests involved and the significant conflict between interests is apparent.

In general, policy should rule on behalf of the animal welfare assurance, societal risk mitigation and sympathetic human interests to prevent the inclusion of products from non-ambulatory animals in food intended for human consumption. Although measured in different units, and difficult to objectively quantify it would appear that livestock unlikely to recover that can not walk should not be transported but immediately killed (utilitarian argument). The human and societal interests are significantly and clearly of greater magnitude than the producer's cultural and financial interest.

As animal welfare is a public good, the development of relevant public policy and regulations place significant obligations on government under the principals' of justice and fairness. The evidence presented in this paper supports the position that the transportation of animals disabled to such an extent that they are unable to stand and walk reasonably unencumbered should be a regulated activity, fairly enforced across the livestock production systems of North America. It appears the US is moving in the direction of prohibiting the transportation of disabled and non-ambulatory animals to public auction (Anon 2003).

Using the ethical matrix as an organization method appears to be suitable to the question of dealing with downer cattle. The process described identifies ethical concerns involving the welfare of animals, autonomy concerns of consumers and justice concerns of non-consumers. Depending on the weighting given to various cells in the matrix almost any ethical evaluation can be supported.

On cursory examination, the transportation of downer cows, ie. the *status quo*, results in considerable infringement on the principals deserving of respect for the agents animals, consumers and non-consumers. The principal of producers is currently not infringed upon and the principals of biota are equivocally respected.

Any regulations related to the disposition of non-ambulatory livestock resulting from the initiative should be national in scope at the least and should be negotiated in an atmosphere of reciprocity with our North American trading partners the US and Mexico. The CFIA is the national organization charged with the humane transport of livestock in this country and would appear to be the lead in enforcement in this area. Enforcement should be delivered in an equitable manner across the country.

Conclusion:

The development of effective public policy and/or legal provisions related to farm animal welfare which accurately reflects of the needs and ethical convictions of Canadian society would entail several steps. Firstly the public needs to be engaged in informed ethical debate; secondly the genuine ethically and value based judgments of society must be coherently communicated to the machinery of political change. Thirdly; the political will to respond must be present in the face of increased financial costs to certain groups of society (Mephram 2000).

Political conviction can take several forms including things prohibited by law, behaviours encouraged by fiscal policy and behaviours discouraged through public education. This paper largely deals with pre-law, developing a framework to facilitate convergence with compromises and provisos that are necessary to arrive at a moral judgment which can be converted into political conviction.

The use of the ethical matrix in a table top exercise as described here in no way assures a high probability or arriving at same conclusion that a more thorough facilitated consultation would produce (Kaiser and Forsberg 2001). Although the process has weaknesses, the ethical matrix provides structure to a discussion without preempting content or ignoring pluralism. Without rigorous public consultation it is possible that some individuals deserving of respect were overlooked or misrepresented in the process.

The ethical matrix process is very accessible to individuals without specialized training in philosophy or ethics and appears to be an approach that may facilitate growing a consensus on particular aspects of farm animal welfare. The evidence presented in this paper supports the

prohibition of transportation of downer cows. This policy results in injury (financial) to producers. Since a downer cow is a non-correlated risk similar to hail damage financial injury should be relatively easy to minimize with group insurance. Agriculture insurance has the added advantage as it has been a preferred mechanism for the public to participate in common good programs through premium subsidization (EC 2001).

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