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# Animal welfare and society concerns finding the missing link

Temple Grandin *

*Dept. of Animal Sciences, Colorado State University, Fort Collins, CO 80523, USA*

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ABSTRACT

Young adults in developed countries are distanced from agriculture and the meat industry needs to do a better job of communicating with them. A major welfare concern is slaughter without stunning. Other concerns, such as poor stunning or high levels of bruising, can be easily corrected by management who is committed to maintaining high standards. Another concern is biological system overload, occurring when animals are bred for more productivity. Researchers and industry need to determine optimum production levels instead of maximums. Retailers are major drivers of animal welfare standards enforcement and they respond to pressure from both activists and consumers.



## 1. Introduction

The meat industry needs to be aware that young adults in their twenties are the first generation to grow up with both computers and mobile telephones. This changes the way they communicate. Social media enables people to network with each other. It is a relatively recent phenomenon, with Facebook being created in 2004, Twitter in 2006, and YouTube in 2005. Today most telephones are video cameras and pictures of animal abuses are more likely to get posted on the internet. All these electronic media are coupled with, the fact and many young adults in developed countries have little knowledge of where their food comes from. Candice Croney at Purdue University and her students conducted a survey and found that only 31% of young adults in the U.S. have ever visited a farm (Candice Croney, personal communication, 2014). A survey in the UK showed that 50% of young adults under age 23 could not link beef cattle with steak and 8% thought bacon came from wheat (Preece, 2014).

Young consumers do have a desire to connect with the origin of their food (Smith & Brower, 2012). The meat industry must start communicating more effectively with these affluent young adults. Their influence will extend beyond the developed world because they will write future legislation and policies that will have an effect on the entire world. In this paper, the author will summarize the most important animal welfare issues and how different segments of the meat industry will be affected by them. In this broad overview, it will not be possible to do an in-depth review of all the issues. The goal of this paper is to highlight some of the most critical areas and provide references that will be useful to scientists who may not be familiar with the welfare issues.

## 2. Two types of animal welfare issues

There are two basic types of animal welfare issues. They are abuse or neglect of animals, caused by direct action by humans and welfare issues where either a process or equipment has to be changed to improve animal welfare.

### 2.1. Examples of abusive treatment or neglect

During the author's visits to hundreds of farms and slaughter houses in over twenty countries, the author has observed that animal abuse occurs in places that have either poor management supervision of employees or abusive methods have become a "normal" industry practice. Many of the undercover videos made in the U.S. show employees on either farms or packing plants abusing animals by beating, throwing, or kicking them. The problems shown on these videos were most likely due to poor management supervision of employees. There are also numerous videos from the developing world which show abusive handling. Correcting problems with abuse will require managers who are committed to stopping it. Neglect can also lead to serious

* Tel.: +1 970 229 0703; fax: +1 970 491 5326.
*E-mail address:* cheryl.miller@colostate.edu.

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welfare problems. Some examples of neglected health problems are advanced ocular neoplasia (cancer eye) in cattle or necrotic rectal prolapses in pigs. A survey done in the U.S. has shown that cattle producers are now doing a better job marketing cows before cancer eye becomes advanced (Nicholson et al., 2013). Another example of neglect is severely emaciated animals. Ahola et al. (2011) found that a higher percentage of dairy cows were marketed with very low body condition compared to beef cattle. Bruises are still major problems in some countries (Paranhos da Costa, Huertas, Strappini, & Callo, 2014). People will work to reduce bruises when they have to pay for the meat damage (Grandin, 1981). Many serious welfare problems that occur during transport, such as high death losses, injuries and bruises can be easily reduced by supervising transporters to stop rough handing, lower stocking densities on the vehicle and training drivers to reduce sudden stops and fast acceleration. There are extensive reviews of the literature on transport in Grandin (2014), Schwartzkopf-Genswein et al. (2012), and Appleby, Cussen, Garcias, Lambert, and Turner (2008).

### 2.2. Welfare problems that will require changes in equipment or procedures at the slaughter plant

These issues can be divided into two subcategories. They are problems that can be corrected by either repairing or a slight modification of existing equipment or procedures. The second type of problem will require major equipment changes.

#### 2.2.1. Examples of minor changes

An example of a successful minor change is improving captive bolt stunning by better maintenance of the stunner (Grandin, 2002). Other examples are, use of electric prods to move cattle or pigs was reduced by employee training and adding lighting on a dark restrainer entrance to reduce balking and refusal to move (Grandin, 2001a). Training employees in livestock and poultry handling methods can also reduce bruises and carcass damage (Paranhos da Costa et al., 2014; Pilecco et al., 2013). Other examples of simple improvements are installing nonslip flooring in stun boxes, scheduling truck deliveries to reduce waiting times for unloading and installing a head holder to improve stunning accuracy (Paranhos da Costa et al., 2014). Head holders must be both well designed and operated correctly to reduce stress. Cattle that were forced unwillingly to enter a headholder, had higher cortisol levels compared to cattle stunned without using the headholder (Ewbank, Parker, & Mason, 1992). A study in Chile showed that the stun box door caused many bruises (Strappini et al., 2013). Simple modifications of control valves on a pneumatically powered door will reduce bruises by enabling the operator to have more precise control of downward movement of the door.

#### 2.2.2. Examples of major changes

The second subcategory will be much more expensive to remedy because equipment or animal housing on the farm will require major changes and renovations. Some examples are switching a pork farm from individual sow gestation stalls to group housing or replacing small battery cages for laying hens with either cage free or furnished cage systems. There will be a further discussion of these housing systems in the sections on pigs and laying hens.

## 3. How do animal welfare issues affect different segments of the meat industry?

### 3.1. Packers

Compared to farms, welfare issues at slaughter plants are easier and less expensive to remedy. People always ask if animals know they are going to slaughter. Cortisol data collected both on the farm during restraint in a headgate and in the abattoir, indicate that stress levels are similar in both places (Grandin, 1997; Mitchell, Hattingh, & Ganhao, 1988). Cattle and pigs that become agitated shortly before slaughter have higher lactate and reduced meat quality (Edwards et al., 2010; Gruber et al., 2010).

Surveys done by Grandin (2000, 2005) and Gallo, Teuber, Cartes, Uribe, & Grandin (2003) showed that the use of numerical scoring could be used to document how simple changes improved stunning and animal handling. The scoring system is described in Grandin (1998, 2010a). Some of the simple changes implemented to prevent return to sensibility in pigs were monitoring electric stunner placement and improved bleeding (Grandin, 2001a). Other simple changes that help prevent return to sensibility is chest sticking of cattle after captive bolt stunning and replacing head only electric stunning with head and heart stunning (Vogel, Badtram, Claus, Grandin, Turpin, Weyker, & Voogd, 2011; von Wenzlawowicz, von Holleben, & Eser, 2012). People manage the things they measure. Measurement is essential because it enables management to determine if procedures are improving or getting worse. In a survey of over 40 U.S. beef plants who were maintaining relatively high standards, the average percentage of cattle rendered insensible with a single captive bolt shot was 97%, the percentage vocalizing (bellow or moo) in stunning area was 2% and the percentage moved with an electric prod was 15% on fed cattle, and 29% on cows and mature bulls (Grandin, 2002, 2005). A plant in Mexico scored over 8000 cattle and the scores were 51% rendered insensible with a single shot, 10% vocalization and 80% moved with an electric prod (Miranda de la Lama et al., 2012). The author commends plant management for obtaining extensive baseline data, but now they need to work to greatly improve their scores.

#### 3.1.1. Slaughter without stunning

The most controversial area from a welfare standpoint is religious slaughter where preslaughter stunning is not used (Anil, 2012). Many Muslim religious authorities will allow preslaughter stunning (Nakyinsige et al., 2013). The use of properly done preslaughter stunning eliminates welfare issues associated with religious slaughter without stunning. Stunning would make religious slaughter similar to conventional slaughter. However, many orthodox Jewish rabbis and some Muslims require a conscious animal that is slaughtered without either precut or immediate post cut stunning. It is beyond the scope of this paper to discuss whether or not slaughter without stunning should be banned.

There are two separate welfare issues when slaughter without stunning is being evaluated. They are the method used to hold and restrain the animal and painfulness of the throat cut. In some countries, highly stressful methods of restraint are used, such as suspending large cattle by one leg, shackling, and dragging, and leg clamping boxes. Undercover videos have been posted online of shackling and dragging, which illustrate severe animal welfare problems. Suspending an animal by one back leg is more stressful than upright restraint (Westervelt, Kinsman, Prince, & Giger, 1976). For large cattle, the two main methods of restraint that can be used to replace shackling and dragging or shackling and hoisting are: an upright restraint box where the animal is held in a standing position or a pen that rolls the animal onto its back. Dunn (1990) found that inverting cattle for over 90 s was more stressful than upright restraint. Vocalization is a useful measure for detecting welfare problems associated with electric prod use or excessive pressure exerted by restraint devices and headholders (Grandin, 2001b; Munoz, Strappini, & Gallo, 2012). Vocalization in cattle during restraint and handling is associated with physiological measures of stress (Dunn, 1990; Hemsworth et al., 2011). In a well-designed and properly operated upright restrainer used for kosher slaughter without stunning, the percentage of cattle that vocalized in the box was under 5% (Grandin, 2005, 2012). In poorly designed systems where excessive pressure was applied, the percentage of cattle that vocalized was 25% and 32% (Bourquet, Deiss, Tannugi, & Terlouw, 2011; Grandin, 1998). Loosening a head restraint so it applied less pressure to a steer's neck reduced the percentage of cattle that vocalized from 23% to 0% (Grandin, 2001b).