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RESEARCH ARTICLE

Killing Animals for Food: How Science, Religion and Technologies Affect the Public Debate About Religious Slaughter

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Abstract This paper discusses the ethics of killing animals for food by looking at current practices of conventional and halal slaughter in Egypt and in the UK. It addresses the role of animal science (with its recent advances on animal sentience), slaughterhouse technologies (with increased mechanization) and religion (with its multiple interpretations of religious rules in the case of halal slaughter) in affecting the public acceptability and the ethical questioning of these practices, as well as the controversy about the authenticity of halal meat in Europe.

Keywords Killing animals · Religious slaughter · Halal food market · Kosher food market · Animal welfare

The practices of farming [and killing] animals for food have long been, and continue to be, the most significant social formation of human-animal relations (E. Calvo 2008, p. 32)

Introduction

At the beginning of the 21st century humans slaughtered well over 100 billion animals for food every year, including a billion cattle, sheep and pigs and over 50 billion chickens.[1] Globally, 99 % of all domesticates are commodities in animal agriculture (Williams and DeMello 2007, p. 14), to be killed and transformed into food products. Global meat production is projected to

[1]For further information see: http://www.hsa.org.uk/, http://www.fao.org/fileadmin/user_upload/animalwelfare/intensive_farming_booklet.pdf

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more than double from 229 million tonnes in 1999/2001 to 460 million tonnes in 2050 [Livestock Long Shadow report, Food and Agriculture Organization (FAO) 2006]. Most of the increased demand for meat and milk will be in developing countries that are increasingly adopting a western diet characterized by a high consumption of animal proteins. In fact, North Americans and Europeans consume more than 83 kg of meat per person yearly, compared with 58 kg in Latin America, 28 kg in East Asia and the Pacific, and 11 kg in Africa south of the Sahara.[2] Food choices differ from country to country, but, as incomes rise, people almost invariably eat more meat, along with milk and eggs and, as Delgado (2003) has forecasted, by the year 2020, the share of developing countries in total world meat consumption will expand from 52 % currently to 63 %. By 2020, developing countries will consume 107 million metric tons (mmt) more meat and 177 mmt more milk than they did in 1996/1998, dwarfing developed country increases of 19 mmt for meat and 32 mmt for milk (Delgado 2003). These changes are occurring very rapidly and sometimes they take unexpected directions: India, for example, for long renown for the widely spread vegetarianism and the protection of cows as sacred animals, is now largely increasing the consumption of meat, especially chicken meat (Subramaniam Mohana and Vellingiri 2014) and, since 2012, has become one of the world's leading beef exporters (India exports water buffalo,[3] which is leaner than conventional beef and sells at a lower price). The United States Deparment of Agriculture (USDA) argued that in 2012 India shipped 1.5 million tons of water buffalo meat, prepared following Halal guidelines, to price-conscious consumers in the Middle East, North Africa, and South Asia (Weeks 2012) and in 2015 it increased the export to 2.082 million tons of water buffalo meat achieving a $4.8 billion annual export trade, and becoming the largest exporter of beef in the world[4].

The Growth of Demand for Halal Meat Worldwide

A significant element affecting the changes in the global demand for meat is the expected growth in the populations of Muslim background that will lead to a significant increase in the demand for halal meat (BBC Radio 4 2012). According to Grim and Karim (2011),[5] with an average annual growth rate of 1.5 %, the world's Muslim population is expected to increase by about 35 % in the next 20 years, rising from 1.6 billion in 2010 to 2.2 billion by 2030.[6] By then Muslims will make up 26.4 % of the world's total population of 8.3 billion in 2030, with a median age of 24 globally. Therefore the global halal market has the potential of serving the world's 1.6 billion Muslims, and is often spoken of as the world's '*Third One Billion*' market alongside India and China.

The rapid expansion of halal meat markets worldwide has been accompanied by an increased export of halal meat from non-Muslim countries and the emergence of a growing number of certification schemes and certifying bodies to reassure the Muslim consumers about

[2] See more at: http://insights.ifpri.info/2012/10/the-meat-of-the-issue-2/#sthash.qDnkUzzV.dpuf

[3] 'The $4.8 billion annual export trade has almost developed by accident – the animals are needed to keep India's huge domestic dairy industry going, said Rabobank analyst Pawan Kumar' (see http://money.cnn.com/2015/08/05/news/economy/india-beef-exports-buffalo/).

[4] See CNN August 5th 2015 at http://money.cnn.com/2015/08/05/news/economy/india-beef-exports-buffalo/ (consulted on March 31st 2016)

[5] See the 2011 Pew Research Center's Forum on Religion & Public Life report available at: http://www.pewforum.org/files/2011/01/FutureGlobalMuslimPopulation-WebPDF-Feb10.pdf

[6] The Muslim population growth (1.5 %) is about twice the rate of the non-Muslim population (0.7 %).

the halal status of the meat (Fischer 2015). For the halal certification the central issue is the definition of what constitutes 'halal slaughter' with multiple and contradictory interpretations of the acceptability of the practice of stunning animals before the cut of the throat (Lever and Miele 2012; Wilson 2014a; Bergeraud-Blacker et al. 2015). In Europe 5.2 % of the population is of Muslim background, accounting for less than 3 % of the global Muslim population, however the market for halal meat is fast growing (Henley 2013; Mesure 2013; Wilson 2014a, b; White 2014; Withnall 2014.) and the segment of the Halal meat market is bigger than what would be expected if only Muslims were consuming halal meat. Moreover there is a significant export of Halal meat to East Asia and other countries. The number of animals slaughtered without stunning is not systematically recorded in most countries in Europe and the Halal certification can be granted to meat obtained from both stunned or non-stunned animals, depending on the certifying body standard (see Lever and Miele 2012 for a discussion about this issue). These trends have raised significant concerns about the welfare of farm animals at the time of killing and several Non-Governmental Organizations (NGOs) have asked for the ban of religious slaughter without stunning in the UK, in Spain and other European countries (Mukherjee 2014; White 2014; Miele and Rucinska 2015; Miele and Parisi 2001). A number of countries in Europe banned religious slaughter without stunning in the 1930s or earlier (Norway, Iceland, Switzerland). However, in the European Union (EU) legislation granted the derogation from stunning for religious slaughter taking place in slaughterhouses with the Directive 93/119/EC. The derogation from stunning has been maintained with the recently approved EU Reg.b1099/2009. This Regulation protects the freedom of religion and the right to manifest religion or belief in worship, teaching, practice and observance, as enshrined in Article 10 of the Charter of Fundamental Rights of the European Union.

However, there are significant exception. In Sweden the killing of animals without stunning is forbidden since 1937. In 1988 the 1937 law was replaced with the Animal Protection Act, which is in force today with amendments. The slaughter of animals in Sweden still requires stunning according to the Animal Protection Act. This Act goes beyond EU regulations and health requirements by requiring stunning before the first slaughter incision to the animal. The Swedish ban on religious slaughter has been criticised (Alwall 2000) but is generally widely supported by the majority of the population. The Act still presents an issue for the Swedish Jewish community whereas the Muslim community has adopted the view that the use of reversible stunning is compatible with their halal practice. Still the controversy is ongoing and some commentator have suggested that the current slaughter regulation is a violation of the religious freedom provisions of the Swedish Constitution[7]. But other countries are experiencing the same problem: Poland and Denmark recently banned religious slaughter without stunning (The Economist 2014), although Poland has since rescinded the ban for domestic consumption and export (Sokol 2014). In February 2014, Denmark also controversially banned religious slaughter (Avasthy 2014). Even though the derogation from stunning was granted in EU law, slaughter without stunning had not been practised in Denmark for over a decade and religious minorities interpreted the new ruling there as anti-Semitic and Islamophobic (Ekman 2015). The exemption from stunning is still legal and applied in all other EU countries. In the UK, Ireland, the Netherlands, Germany, Italy and France – countries with large Muslim communities – there are now effectively dual halal markets for meat: one originating from stunned and another from non-stunned animals (Lever and Miele 2012). Apart from Germany, where there

[7] http://www.loc.gov/law/help/slaughter-domestic-animals/slaughter-of-domestic-animals-sweden.pdf

are strict controls on the number of animals that can be slaughtered without stunning in line with demand from local religious communities, several European countries also supply their export markets with meat from non-stunned slaughter and this raises significant concerns among the animal welfare and animal rights NGOs (Miele and Rucinska 2015).

According to a recent survey carried out in the UK by the Food Standard Authority (FSA), 80 % of all animals slaughtered according to the Halal rules are pre-stunned (FSA 2012). However there is growing pressure from a minority of Halal certifying bodies (e.g. the Halal Monitoring Committee) to promote 'non-stunned' Halal meat as more 'authentic' and traditional (Lever and Miele 2012; HFA 2014). The certifying bodies advocating non-stunned practices of Halal slaughter claim that Muslim consumers are not correctly informed and that mainstream certifying bodies go against the wishes of Muslim consumers by allowing the practice of stunning before slaughter. Muslim concerns about 'authenticity' are to some extent related to uncertainties about the transparency of the meat supply chain and there are fears about 'fake' Halal products (Mintel Oxygen 2002; Pointing et al. 2008; McElwee et al. 2011). In 2002, Mintel estimated that 70–80 % of all Halal meat in the UK was 'fake', whereas another survey revealed 'Halal' kebabs containing pork (BBC 2009). At the same time, these developments raise public concerns and ethical questioning about the suffering of animals at the time of killing in practices of religious slaughter without stunning, and there is a growing demand for labelling according to the methods of slaughter (see Compassion in World Farming, British Veterinary Association, Humane Slaughter Association campaigns) in order to protect the rights of non-Muslim consumers to be informed about the status of the meat they eat (Withnall 2014). As the Halal market has grown, this latter problem has gained increasing attention in the political arena, again largely because of the lack of transparency in the meat supply chain. Parts of carcasses originating from animals killed with religious slaughter practices (both with and without stunning) are currently regularly sold un-labelled in the conventional market to consumers who are not informed about the method of slaughter of the meat they consume (Miele and Rucinska 2015). For example, the hindquarters of cattle carcasses slaughtered without stunning according to the shechita rules – which cannot be labelled as kosher meat – can end up in the mainstream market (Khalid 2013; Kahn-Harris 2014), even though there are recent initiatives by Shechita UK to keep these parts of the carcasses only in the religious market, e.g. to sell them to Muslim consumers as Halal, which is compatible with the policies of many Halal certifying bodies. However the uncertainty of these practices and the lack of transparency led the European Commission to conduct a survey about information available to consumers on the methods of stunning. The results[8] published in May 2015 indicated that in Europe there is generally a low level of interest in information about the method of stunning and a widely accepted concern for the right of religious minorities to practise their religion, even though there are regional variations, and in certain countries this issue is more relevant (Doward 2014; Malnick 2014).

It should be noted that the Halal food markets are not similar everywhere. Each market has unique attributes through their culture, location, income per capita, and other factors. In Europe

[8] See http://ec.europa.eu/food/animals/docs/aw_practice_slaughter_fci-stunning_report_en.pdf

the controversy about stunning in Halal slaughter is relatively recent, up until 20/30 years ago, the meat available on the conventional market was considered 'lawful' or 'Halal' by the Muslim consumers living in Europe because it was produced by 'The People of the Book' (Christians & Jews) and there is a passage in the Qur'an that clearly indicates that the meat of 'The People of the Book' is lawful for Muslims. However in recent times a number of certifying bodies (such as the Halal Monitoring Committee (HMC from now on) in the UK) have questioned the assumption that the meat produced in Europe is produced by the 'People of the Book' and have pointed out that the number of religious people is declining, with only a minority of European citizens declaring they are religious and attending religious practice[9] (Lever 2013). Moreover they question the adoption of a number of technological innovations in halal slaughter (largely accepted by many other halal certifying bodies, both in Europe and in other countries), and they advocate 'traditional' Halal as the only authentic Halal. This is clearly stated in the HMC website, where they identify a number of problems in the halal industry that they assert put into question the reliability of the 'halal' certification:

> 'There are many causes which have contributed to Halal products being falsely labelled. Some of these include:

- Slaughtermen at abattoirs not reciting the Tasmiyah (a mandatory condition for Halal) or using of taped recitation of the Tasmiyah
- Controversial use of mechanical slaughter and rotating blades (often severing necks and missing frontal cuts)
- Stunning of animals that bring into question whether the animal was alive at the point of slaughter
- Mixing of meats including use of pork in Halal products or cross contamination with non-Halal meats
- Incorrect incisions and insufficient vessels being cut, to meet Halal criteria.' (HMC, http://www.halalhmc.org/HMCCriteria.htm, consulted June 2012).

The controversy about the authenticity of the Halal claims pose the question about what makes acceptable or perceived as *humane* a set of practices (rules, tools/technologies) for killing animals for food in traditional Halal slaughter (without stunning) and in conventional slaughter with stunning. In order to explore this issue in the following I will present two cases of Halal slaughter practices, one in Egypt and one in the UK.[10]

[9] This claim is supported by recent trends in self-reported attitudes towards religion. For example according to the British Social Attitudes Survey's 31st report issued in 2014, in the UK between 1983 and 2013, the percentage of the population which describes itself as belonging to no religion has risen from 31.4 to 50.6 % with sharp declines in the number of people identifying themselves as Christians (from 65.2 % in 1983 to 41.7 % in 2014). Membership of the Church of England has seen the greatest decline in its numbers going from 40.3 % of the population in 1983 to 16.3 % in 2014 (http://www.britsocat.com).

[10] The paper is based on data collected as part of the Dialrel project (see www.dialrel.EU). This study of slaughter practices included interviews with religious authorities representatives, veterinarians and slaughterhouse staff, members of certifying bodies and participant observations (carried out in Egypt and England, in 2010), as well as textual analysis. The textual analysis was carried out by consulting journals, reports, magazines, legislation, government directives and circulars. NGOs campaigning for animal welfare and certifying bodies provided information that was utilized where it could be substantiated by my own observation in abattoirs, or by material from interviews that I undertook with animal scientists and veterinarians, meat inspectors, butchers. This account draws largely on best practices.

Traditional Halal Slaughter in Egypt and Conventional Slaughter in the UK

Halal slaughter is the Muslim method of killing animals for food. It is the process of killing an animal that is lawful according to Islamic law (Halal) and, even if there are variations in the actual practices, there are several common elements:

- It requires that the animal is *alive* at the time of slaughter.
- The slaughter process must be carried out by a trained Muslim and begins by invocation of Allah (*Bismillah*, *Allahu Ekber*, In the Name of Allah).
- Halal slaughter is considered achieved if the trachea, oesophagus and main arteries and veins are cut in the neck region (at least three of the four structures oesophagus, trachea and both carotid arteries must be cut completely).
- The instruments for slaughter must be sharp to ensure the most stress-free and quick cut possible and optimal bleeding.

The most contested issue is the stunning of animals before the cut of the throat because there is the risk that a number of animals are killed by the stunning (e.g. high voltage for the electric bath for chickens) and therefore they would not be 'alive' at the time of slaughter, or the stunning is not reversible, therefore the animals are permanently injured by the stunning, as in the use of a penetrative captive bolt for cattle (Evans and Miele 2012). The practices of stunning are much more contested in Europe than in other countries, where the lack of stunning is often due to the lack of availability or to the cost of the equipment, more than the interpretation of the religious rules (Lever et al. 2010). The following excerpt from the notes taken during a fieldwork carried out in Egypt in 2010[11] in a small town by the seaside near Mansoura will illustrate some of the aspects of how traditional halal slaughter is carried out and how it is made acceptable to the Muslim consumers.

Vignette 1 – Egypt

In a small holiday town near Mansoura we came across a number of butchers' shops in the streets. A few carcasses of animals were hung at the entrance of the shop (Fig. 1). We learnt that the butcher and the other shopkeepers killed the animals in the back of the shop. Only in larger cities are animals slaughtered in slaughterhouses. The butcher was butchering the carcasses in the shop, in front of the customers and the people passing by (Fig. 2). The meat was exposed on a table with no refrigeration. The butcher and the other shopkeepers were amused by our interest in their operation. They were all showing lots of pride in what they were doing (Fig. 3).

This is a brief account about how animals are killed and how their bodies become meat, but how are animals made 'killable', how is this killing made acceptable/humane/lawful within traditional Halal slaughter practices? There are three elements that characterize this practice:

- *Permissibility* – only certain animals are slaughtered and are deemed to become food;

[11] The visit to this town was carried out for the research project Dialrel (see www.dialrel.eu) in conjunction with a workshop in Mansoura (Egypt) with a number of Muslim Scholars and academic as well as religious authorities about the stunning of animals at time of killing in halal slaughter.

Fig. 1 Small Halal butcher' shop in Mansoura, Egypt

- *Respect for and dignity of the animal* – the killing is performed in a 'ritual' mode; it is accompanied by a prayer recited by the slaughterman;
- *Responsibility and care in killing is attributed to the slaughterman* – there is human contact at the moment of death.

The trust in the practice of traditional Halal slaughter is largely based on the respect that the slaughterman has gained in his community, his competence and the care he is expected to take of the animals. Another important element is the appropriateness of the knife and other equipment used. The killing of animals for food in that context is normalised by the ordinariness and ubiquitousness of the butchers' shops as well as the total openness and transparency of the practices and premises for killing and butchering.

In the UK, as well as many other countries in Europe, the killing of animals for food is totally removed from the sight of the public. Nowadays, slaughter in the UK is performed in conventional highly sophisticated slaughterhouses that allow the

Fig. 2 Butchering of the carcasses on the butcher' shop premises

Fig. 3 Pride of the butchers

performance of different types of slaughter: conventional, Halal and high welfare for organic production…. all of which depend on the method of stunning. Here, the slaughterhouse emerged in the early 19th century as part of a larger change from an agrarian to industrial system, coupled with increased urbanization, technological developments, and concern about public hygiene (Brantz 2008). Halal meat, in most cases, originates from modern slaughterhouses as well. These plants replaced the hand-slaughter of farm animals by individual butchers, who often executed this task in their butcher shop, and the blood running through the nearby streets gave a special messy character to these locations that in England were called '*shambles*'. Some of the main achievements of this invention were the increased speed and efficiency of killing as illustrated by the following account of a visit to a modern slaughterhouse in the UK.

Vignette 2 – UK

The poultry slaughterhouse that we are visiting looks a very anonymous industrial building from the outside. There are no signs or indication about the activities carried out inside.[12] This is a modern slaughterhouse where over 2 million chickens are slaughtered every year.

We have been granted the authorization to visit the slaughterhouse only if accompanied by the on-site veterinarian who guides us and explains to us the activities taking place in it. For hygiene reasons we start from the 'clean' area where the carcasses of the animals are butchered and then we move to the 'dirty' area where the animals are killed. In the butchery we see rows of machines as well as workers trimming chicken breasts, de-boning thighs and removing skin. All the workers are very busy and nobody pays attention to us.

[12] Vialles (1994) makes similar observations regarding the location and appearance of modern slaughterhouses in France.

Fig. 4 Chicken carcasses in the cooling room

Next to this area there is the chiller, where the chicken carcasses, on a slowly moving shackle line, arrive at blood temperature and after 2 h, leave this area at 4C degrees (Fig. 4).

The only direct contact that the chickens have with humans occurs at the beginning, when they are removed from their crates and are hung upside down on the shackle line. From that moment onwards everything is automated. Other areas comprise the evisceration line where the innards (or the '5th quarters' as they are known in the business) are mechanically extracted. Then there are the de-feathering machines and the warm water baths heated to 54C degrees to remove the feathers and, immediately adjacent to this, there is the slaughter area with its stun bath, controlled by an electric panel (Fig. 5), automated cutting blade and bleed out track. These are the key components of the entire slaughterhouse. The settings of the electric panel decide if the slaughter can be certified as 'halal' (the 'reversible stunning' setting) or stun-kill/high welfare setting (when the animals are actually killed by the high voltage, as suggested for slaughter of chickens that will be labelled as organic). Then there is chair for a Muslim reciting the *Tasmiyah* or, in his absence, a tape is reciting the prayer (Fig. 6). Finally, we end to the lairage area where crates of birds are unloaded from the lorries that transported them from the farms. We learn that about 1000 birds per hour are loaded on the shackle line by five workers and the slaughterhouse is not even working at its full capacity.

Then how are animals made 'killable', how is the killing considered 'humane' in modern conventional slaughter practices? European consumers consider the lack of pain and

Fig. 5 The electric panel that control the method of stunning

Fig. 6 The chair for the Muslim man reciting "In the name of God (Bismillah)" during Halal slaughter

consciousness the most important element that makes 'acceptable' the killing of animals for food (Miele and Evans 2010; Evans and Miele 2012). This concern is reflected in the European regulation on killing animals that imposes the stunning of animals before the cut of the throat. The elements that help achieve the acceptability of killing of animals for food in modern slaughterhouses are:

- *Science* for addressing animal suffering;
- *Technologies* (of stunning) for achieving animals' unconsciousness;
- *Mechanization of killing*, for efficiency and standardization.

Recent advances in animal science have provided an account of when and how animals are suffering at the time of killing (see Velarde et al. 2010) and technological innovations in stunning practices are adopted to reduce the suffering of animals by inducing 'unconsciousness'. Stunning is defined in the EU regulation on killing animals as the technical process that induces *immediate unconsciousness* and insensibility in animals, so that slaughter can be performed *without avoidable fear*, *anxiety*, *pain*, *suffering and distress*. Stunning methods can be reversible or irreversible. Moreover, the actual killing relies much less upon the skills or care of the slaughterman but, with increased mechanization of slaughter, especially in the cases of poultry, it largely relies on the efficiency and efficacy of the technological apparatus.

Ethics in the Domestic and Post-Domestic Eras

As mentioned at the beginning of the paper, one of the main challenges of the 21st century will be the growing demand for food for sustaining a fast growing human population. Demand for animal products is expected to double in the next decades. What are the main ethical questions that arise from the current and expected increase in the demand for animal products? How are human–nonhuman animal relations going to change as a consequence of these trends?

The historian Richard Bulliet (2005) has argued that the way in which we view animals (in western countries) has changed dramatically over time (for most species at least) and the killing of animals for food is now actively 'hidden' from consumers' sight by the animal food

supply chains, since it is considered to bring about feelings of guilt on the consumption of meat (Miele and Evans 2010; Miele and Parisi 2001). To make sense of these changes, he distinguishes two periods in our relationships with nonhuman animals: domesticity and post-domesticity. During the domestic era, the social and economic structures normalise daily contact with animals, (including non-pets). This era is easily contrasted with the current post-domestic era (which Bulliet argues took shape in the 1970s) where people are physically and psychologically removed from the animals that produce the products they use, yet most, somehow paradoxically, enjoy very close relationships with their pet animals (see Charles 2014). A tension emerges in this era between a growing fondness for some animals and the consumption of others:

> A post-domestic society emerging from domestic antecedents continues to consume animal products in abundance, but psychologically, its members experience feelings of guilt, shame, and disgust when they think (as seldom as possible) about the industrial processes by which domestic animals are rendered into products and about how those products come to market (Bulliet 2005, p. 3).

Bulliet claims that this separation produces different perspectives among people, illustrating his point with the example of children witnessing animal sexuality or reproduction during life on the farm, ranch or grassland. When the most common features of animals' lives are removed from sight, Bulliet argues, people change their fantasies, their interests. He claims that there is a connection between the disappearance of killing or witnessing of animal sex and the rise of pornography in USA (Bulliet 2005, p. 14).

We can see these different attitudes towards animals not only as evolving through time, but also synchronically, through space, where a domestic ethic is prevalent in less industrialized countries and a post-domestic one is more widely spread in the most industrialized countries.

The majority of people in industrialized countries, especially those living in urban areas, are not aware of the enormous changes that have occurred in the livestock industry in the last 50 years: the increased scale of production, the shorter lifespan of animals, the all year around confinement and the specialization of production (see Miele et al. 2013). For example, the majority of European consumers are not aware of the most common animal farming practices, many believe that the same animals produce eggs and chicken meat or are not aware that in order to give milk the cows need to give birth to a calf that will end up in the meat industry (Miele and Parisi 2001; Blokhuis et al. 2013). It has been argued that in this post-domestic era, the animals are not only lesser subjects than humans and therefore deemed worthy of complete domination, but also objects – machines of production (Emel and Neo 2015). And Noske (1997) has suggested that post-domestic meat and milk animals have lost their bio-legitimacy – they have become de-animalized, socially deprived, alienated from their own products and from the outdoors and there is a growing movement for bringing the animals back outdoors (see Emel and Neo 2015).

While the industrialization and specialization in animal rearing are met with disconcertment and embarrassment (when revealed), they are most often accompanied with nostalgia for previous times and with a desire for smaller scale and more traditional practices of rearing animals, where a person (a farmer) was taking care of the animals. However, in the case of killing animals, there is no nostalgia for the most traditional practices of killing and technological innovations for minimizing the suffering of animals are unanimously deemed necessary. Indeed the most sophisticated technological innovations in stunning are especially promoted by the organic products organizations (e.g. Soil Association in the UK) that, for

other aspects of their practices, take inspiration from more traditional farming systems (see Miele and Evans 2010 and Evans and Miele 2012). Bulliet (2005) has argued that the countries producing the largest quantities of meat (i.e. US, Canada, Australia and New Zealand, but we also could add several European countries such as the UK and the Netherlands) have the 'strongest post-domestic mentality', and there are indications that the massive scale of animal slaughter in these countries is increasingly troubling. As Vialles observes in her study of modern slaughterhouses in France 'whereas the slaughter of a few animals may be a festive occasion, slaughter on a large scale is different. It is disturbing; therefore means must be found of putting it out of mind' (Vialles 1994, p. 72). Then, Otter has argued that 'the attempted cultural amnesia brings its own set of consequences and *this institutionalized forgetting* might create the conditions of possibility for cruelty of a new kind, on a greater, more deeply hidden scale' (Otter 2008 in Fitzgerald 2010, p. 59).

The practices of killing animals for food with the increased globalization of food markets and increased circulation of people and products will generate further controversies and ethical questionings: different attitudes towards animals seem to clash in the context of the controversy about stunning in the case of religious slaughter, where an ethic informed by 'domestic' practices (such as the ones still practised in Egypt and many other Muslim countries) clashes with very different attitudes and sensibilities developed in what Bulliet (2005) would characterize as 'post-domestic' societies. Then the certainties and the system of reassurance of the 'domestic' era, where a (relatively) small number of animals was killed in small butchers' shops (and could be witnessed by everybody on the streets) will be much more difficult to be applied to the more mechanized and large scale killing of animals in slaughterhouses that are rapidly appearing in less industrialised countries as well. However, the modern slaughterhouses, with their technologies of stunning, refraining and standardizing deployed to address animal suffering, workers' safety and speed of processing, seem to come more and more under criticism for the very achievements of their operation: the astonishing scale of killing animals that they enable. The mass production of meat and mass killing without *animal suffering* performed in slaughterhouses is increasingly seen as problematic both on ethical ground and from emerging cultural attitudes. For example Kasperbauer and Sandoe have argued in favour of a perfectionistic understanding of animal welfare, where, among other issues, a good animal life is a life of a certain 'natural' length. In this perspective killing animals can be considered a welfare problem, even if it happens painlessly. This is because it stops animals from living up to their natural life span (Kasperbauer and Sandøe 2016). And from a cultural perspective meat eating is increasingly questioned by a significant minority of trend setter consumers (i.e. celebrities such as Beyonce and her husband Jay-Z and public figures, such as Bill Clinton and Bill Gates) that adopt a vegan diet for a range of reasons ranging from concerns for the quality of life of animals, but also for health and environment, even though they may not commit themselves to this choice full time (see Barford 2014).

The future developments of the slaughterhouse is uncertain and it has been inferred that 'Perhaps the consequences of the tension between the modern slaughterhouse and post-domestic cultures will become increasingly evident. If so, this could give rise to a new sort of environmental/social justice movement.' (Fitzgerald 2010, p. 66).

For this new ethical questioning neither a nostalgia for a domestic sensibility nor a post-domestic attempt to remove the suffering from the practices of killing animals seem to be adequate and the very issue that is increasing coming to the fore is the ethics (as well as the health and environmental concerns) associated with mass consumption of meat. For this ethical questioning these two institutions (the traditional practice of killing and the modern

slaughterhouse) do not seem to offer satisfactory answers: the most pressing issue that will need to be addressed is not how to kill 'humanely' farm animals for food, but how to find ways to reduce the number of animals that need to be killed for food.

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