

Shechita (Kosher slaughtering) and European legislation

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Stunning,
Unconsciousness.

Summary

Shechita is the procedure of killing or slaughtering animals for food production, according to Jewish tradition and it is performed without prior stunning. USA and European legislations conditionally allow slaughter without prior stunning in the frame of religion freedom (USA) or religious/cultural traditions (EU); nevertheless some traditional events in Europe definitely represent a concern for animal welfare. It is possible to identify animal welfare issues in the rules for *shechita*: correct restrain of the animal; adequacy of the instrument (knife); technical ability of the operator. Animals restrain techniques evolved along the time in order to accomplish to less stressful immobilization of animals in course of *shechita*. When performed in the right way, *shechita* cannot be framed as negligent or intentionally painful, distressing or inducing suffering to animals. Today's stunning techniques raise concerns relative to adequacy and effectiveness of stunning on animals, with welfare implications due to automatism of next dressing procedures. *Shechita* needs in Europe are in line with average meat demand by non Jewish population.

La shechita (macellazione ebraica) e la legislazione europea

Parole chiave

Benessere animale,
Incoscienza,
Legislazione
comunitaria,
Shechita,
Stordimento,
Dolore.

Riassunto

La *shechita*, il metodo di macellazione secondo la tradizione ebraica eseguita senza preventivo stordimento degli animali, è approvato in Europa in base al riconoscimento di tradizioni religiose e culturali e negli Stati Uniti d'America in virtù del principio della libertà religiosa garantita dalla Costituzione. Nonostante ciò, a livello europeo sono emerse controversie sulla tutela del benessere animale nella macellazione eseguita secondo il rituale *shechita*. Nel presente lavoro vengono analizzate le diverse fasi del rituale *shechita*: corretto contenimento dell'animale; adeguatezza dello strumento utilizzato per la macellazione; abilità tecnica dell'operatore. Lo scopo è dimostrare che la corretta esecuzione della pratica rituale non provoca, negligenza o intenzionalmente, dolore, ansia o sofferenza agli animali. al contrario, l'evoluzione delle tecniche di contenimento permettono la riduzione dello stress per gli animali.

Introduction

Shechita is the procedure of slaughtering animals for food in accordance with Jewish tradition. The practice is carried out with no preliminary stunning and involves the severance of blood vessels in the neck, with a frontal cut across the throat. In this regard it is similar to the *dabkha* (islamic slaughtering) and is considered an acceptable method of animal slaughtering by the Terrestrial Animal Health Code

of the World Organization for Animal Health (OIE 2016). The essentials of *shechita* are derived from a *mitzvà* (commandment), which is found in the book of Deuteronomy 12:21

«[...] you may slaughter animals from the herds and flocks the Lord has given you, as I have commanded you, and in your own towns you may eat as much of them as you want».

From the written text it is not possible to derive a

particular methodology of slaughtering, which is in fact derived by the Jewish Oral Law, detailing and regulating both the technique of slaughtering and the eligibility to practice it. In principle anyone may practice *shechita*, but essentially only those individuals authorised by a rabbinic authority may do so. The authorisation to slaughter is only given to a *shochet* (slaughterer), who is knowledgeable in all details of the required regulations and has shown competence in the task (Isserles about 1570a).

The *shochet* himself, even when he has received the authorisation to slaughter, is obliged to regularly review the *shechita* laws in order to avoid the risk of flawed slaughtering (e.g. blunt knife, poor technique, etc.), which may induce unnecessary suffering to animals. It is not the purpose of this review to enter into all the details of ritual slaughtering, but it is worthy to point out that ritual slaughter is considered a genuine profession, which is highly valued and requires suitable training. The profession is highly regulated and subject to scrutiny.

When examining the laws of *shechita* as detailed by Jewish *halacha* (law), it is clear that ultimate importance is given to the 'instrument' of the *shechita*, the knife; to the 'immobilization' of the animal, and finally to the 'cut' itself, which implicates a decisive and resolute action of the *shochet*. A veterinary categorisation of the above mentioned rules may be summarised in a few fundamental concepts: suitability of the instrument for slaughter; restraint of the animal; the anatomical precision of the cut; and the ability of the operator.

The procedures required for *shechita* attempts to grant the animal a painless death (Ha Levi A. 13th cent), with emphasis on provision of adequate kosher food and animal welfare. It cannot be understated and should be highlighted the importance given by Jewish tradition to animal welfare, in the sense of avoiding both physical suffering and stressful situations (Ha Levi A. 13th cent, Karo 1563d).

Animals are sentient beings and they have basic rights

Subsequent to the publication in 1965 of a technical report regarding conditions of rearing animals in intensive farms, in the United Kingdom (UK), the principal of "basic rights" for domestic animals was outlined (Brambell 1965). These conditions were clearly indicated as animals' "freedoms". These were then redefined by the Farm Animal Welfare Advisory Committee, which then became the Farm Animal Welfare Council (FAWC) in 1979 and were summarised in the "Five animals' Freedoms" as we know them today: freedom from hunger and thirst; freedom from discomfort; freedom from pain,

injury, and disease; freedom to behave normally; freedom from fear and distress. These constituted the milestone of the first UK legislation, which was followed by the European legislation (Treaty of Functioning of European Union 2012)¹ and served as a reference for other countries. According to FAWC, the Five Freedoms represent an ideal state, rather than a welfare standard, and should be implemented in farming as well as during transportation and slaughtering. The "welfare" concept, implicates both a physical and a mental state of the animals. Article 13 of the Treaty on the Functioning of the European Union refers to animals as sentient beings (Treaty of Functioning of European Union 2012):

"In formulating and implementing the Union's agriculture, fisheries, transport, internal market, research and technological development and space policies, the Union and the Member States shall, since animals are sentient beings, pay full regard to the welfare requirements of animals, while respecting the legislative or administrative provisions and customs of the Member States relating in particular to religious rites, cultural traditions and regional heritage."

Until now, the EU legislation recognises a certain area of local autonomy (national and/or regional) referring to traditions and religious and cultural values. This is expressed in the Regulation 1099/2009 on the protection of animals at the time of killing² (Reg. 1099/2009).

In particular it specifies (Reg. 1099/2009):

«Protocol No. 33 (annexed to the Treaty of the Union) underlines the need to respect the legislative or administrative provisions and customs of the Member States relating, in particular, to religious rites, cultural traditions and regional heritage when formulating and implementing the Community's policies on, inter alia, agriculture and the internal market. It is therefore appropriate to exclude from the scope of this Regulation cultural events, where compliance with animal welfare requirements would adversely affect the very nature of the event concerned.» (Reg. 1099/2009, Whereas, 15).

And furthermore:

«There is sufficient scientific evidence to demonstrate that vertebrate animals are

¹ European Union (EU). 2012. Treaty of Functioning of European Union. Consolidated version. *Off J*, **C 326**, 26.10.2012. <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A12012E%2FTXT>.

² European Commission (EC). 2009. Council Regulation No 1099/2009 on the protection of animals at the time of killing. *Off J*, **303**, 18.11.2009. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:303:0001:0030:EN:PDF>.

sentient beings which should therefore fall within the scope of this Regulation. [...]». (Reg. 1099/2009, Whereas, 19).

Issues linked to animal welfare during slaughtering procedures

The main issues linked to animal welfare at the time of slaughter focus on:

1. restraint of the animal before slaughtering;
2. stunning methods and derogations to stunning obligation;
3. slaughtering, sticking techniques;
4. pain management;
5. unconsciousness evaluation;
6. death of the animal and initiation of subsequent procedures.

Restrain of the animal before slaughtering

In principle, with few exceptions, current EU legislation requires a preliminary restraint of the animal, which also includes slaughtering without preliminary stunning. Restraint has different scopes:

«Restraining animals is necessary for the safety of operators and the proper application of some stunning techniques. However, restraining is likely to create

distress to the animals and should therefore be applied for as short a period as possible.» (Reg. 1099/2009, Whereas, 32).

«Restraint means the application to an animal of any procedure designed to restrict its movements sparing any avoidable pain, fear or agitation in order to facilitate effective stunning and killing.» (Reg. 1099/2009, 2, p).

Business operators shall ensure that all animals that are killed in accordance with Article 4(4) without prior stunning are individually restrained; ruminants shall be mechanically restrained.

«Systems restraining bovine animals by inversion or any unnatural position shall not be used except in the case of animals slaughtered in accordance with Article 4(4) and provided that they are fitted with a device that restricts both the lateral and vertical movement of the head of the animal and are adjustable to be adapted to the size of the animal.» (Reg. 1099/2009, 15, 2).

Substantially, relative to the form of animal restraint, current EU legislation recognizes a criterion of exceptionality to restraint systems which oblige that animals are placed in unnatural positions (for example upside down restraint – on the back) only when conforming to religious rites. Unnatural positions of restraint represent the first divergence between *shechita*, as practiced in some countries, and pro-animal rights attitudes.

During *shechita*, the restraint of the animal is

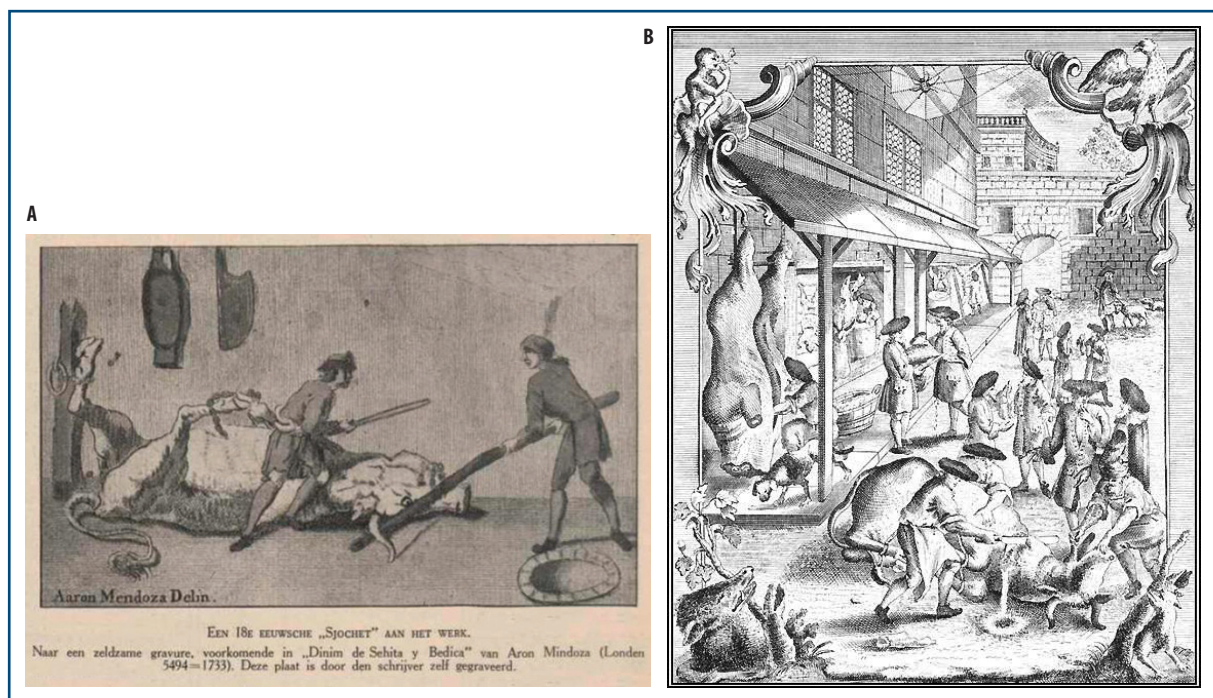


Figure 1. Restraining during shechita in Holland (Mendoza, 1733) and Germany (Kirchner, 1734) in the XVIII century.

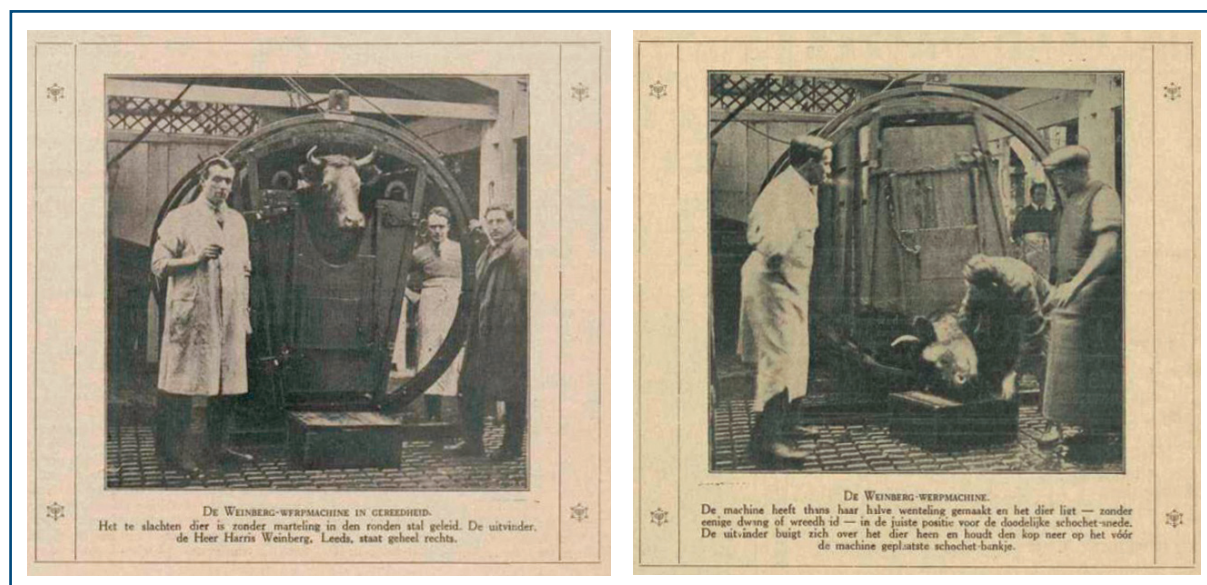


Figure 2. One of the first rotating pen, the Weinberg pen, presented in Holland in 1928 (Stoppelman, 1928).

mandatory by Jewish law (Chaim Sofer about 1900b) and in the past, like other non-kosher slaughtering, restraint was obtained by placing the animal on its back (Figure 1). As in other slaughtering systems, practises such as restraining without prior stunning, suspending or hoisting animals by the feet or legs are not used because they cause severe pain and stress in a conscious animal (OIE 2015, Reg. 1099/2009).

Starting in the 19th century new mechanical restraint systems were introduced, which were more dependable for slaughter plant operators and with the ability to accelerate operations (Figure 2). 'Animal welfare' is a continually developing concept and what appeared to be innovative at end of 19th century or at the beginning of the '30's, required new reflections and changes already after WWII. This is also true for current practises.

«Science and technical progress are regularly made with regard to the handling and restraining of animals at slaughterhouses. It is therefore important to authorise the Commission to amend the requirements applicable to the handling and restraining of animals before slaughter while keeping a uniform and high level of protection for animals.» (EU 1099/2009, Whereas, 44).

Starting in the 1950's, in the USA, on the initiative of Rabbi J. Soloveitchick, the American Orthodox Union (OU) started using the American Society for the Prevention of Animal Cruelty (ASPCA)³ pen (Levinger 2004). The modifications it had for *shechita*, progressively switched from 'upside

down *shechita*' to the 'upright position *shechita*'. Founded in 1866, by Henry Bergh, ASPCA was the first organization in the Western world to have taken upon itself the mission "to provide effective means for the prevention of cruelty to animals (throughout the United States)" (ASPCA 2016).

Gradual adoption to 'upright position *shechita*' in the USA is part of the wider context in the search of a shared point of view between animal welfare concerns – including stress and panic reduction – and observance of *halacha* principles (Hoffman 2012). In Eastern European countries, 'upside down' *shechita* was the only method used and attempts to introduce this kind of slaughter in the USA had negative consequences on the perception of the *shechita*. The OU, under Rabbi M. Genack's leadership, strongly supported 'upright position *shechita*', in which the chin of the animal is held up (Hoffman 2012) (in order to avoid the disqualification due to 'drassa': hacking or pressing or any undue pressure on the cut which renders the animal's meat unkosher) as in Grandin projects (Grandin and Regenstein 1994) and/or projects previously undertaken by ASPCA together with Rabbi Soloveitchick and Rabbi M. Feinstein (Levinger 2004).

The restraint of head and neck through the chin lift avoids the neck 'falling' on the knife during the cut, so far inducing the *shochet* to 'force' the cut or even blocking the cut itself, which would not only nullify the *shechita* but also induce unnecessary pain to the animal due to prolonged or forced action. "The OU's preferred method of *shechita* – from a *halacha* perspective – is upright *shechita*. Indeed, OU will only grant permission to *shechita* in the reverse position if steps are taken by the company seeking

³ <http://www.asPCA.org/about-us>.

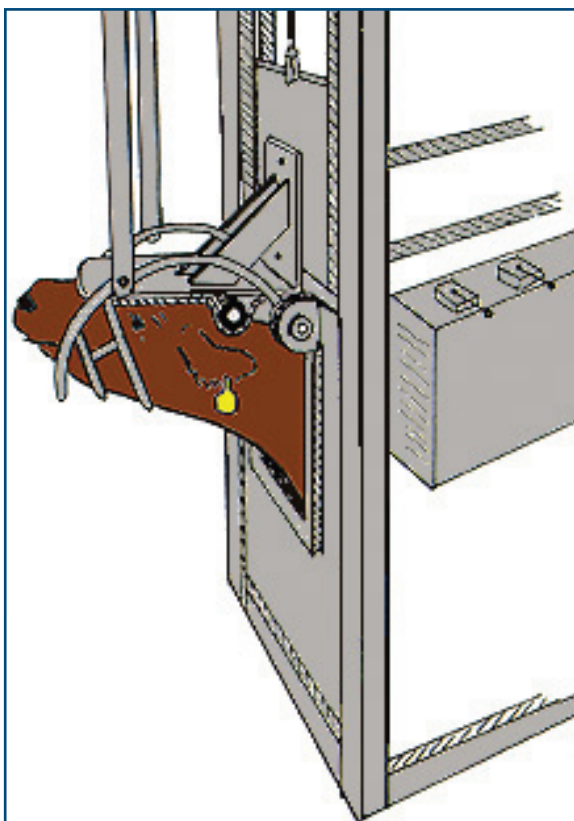


Figure 3. The ASPCA pen modified with chin-lift to accomplish shechita in upright position (from T. Grandin website, 1994).

the supervision to ensure the comfort of the animal" (Hoffman 2012) (Figure 3).

Contrary to EU Countries, in the USA, it is possible to restrain by hand and perform *shechita* of small animals (sheep, goats, young calves) when these are in an upright position and mechanically conveyed. According to EU regulation, for ruminants (cattle, sheep, goats, etc.) slaughtering respecting religious rites obliges a complete mechanical restraint of the animal. From a *halacha* point of view, considering the OU position, it is therefore possible to reconcile *shechita* with animal restraint in a 'natural position', that is upright or standing.

In the EU, the use of rotating pens is forbidden in Estonia and the UK. Recently the EU Commission called for a study (SANCO/2012/10357) (named BoRest) to be performed in countries in which *shechita* or *dabkha* is practiced, with the purpose of comparing the feasibility of *shechita* using restraining equipment in the 'upright/standing' position compared to 'upside down/back' position or lateral. Results have been recently published (SANCO Study 2015). Using a limited number of animals (1,113 animals in total), of which 294 for *shechita* (60 in upright position; 234 in upside down position) in 7 abattoirs. The results of this study were apparently in contrast to data on *shechita* collected

in the USA and Canada, by Grandin in several slaughterhouses and involving some thousands of animals (Grandin 1994). Differences were related to the struggling attitude of cattle according to the restraint position (upright, lateral, or upside down), the number of cuts, and time to unconsciousness. The study did not produce conclusive findings favouring of one of the positions (upright, lateral, upside down) at the time of bleeding. Most observed variables were within the same range in the different positions.

Stunning methods and derogations to the obligation of stunning

Different techniques exist for stunning before sticking or cutting: penetrative captive bolt; non-penetrative/percussive bolt; electric stunning 'head-only' or 'head-heart'; gas stunning (CO₂; Argon; others); electrified bath or tongs for birds, etc.

It is not the purpose of this work to detail each of these, rather to underline the inherent failures to these methods (for a more detailed investigation, see Zivotofsky and Strous 2012). Every technique has advantages and disadvantages, as well as failure percentages, which requires a second stunning, if the operator perceives a failure. Derogations to stunning, or rather the possibility to slaughter without stunning are allowed:

«In the case of animals subject to particular methods of slaughter prescribed by religious rites, the requirements of paragraph 1 (for which "animals shall only be killed after stunning") shall not apply provided that the slaughter takes place in a slaughterhouse.» (Reg. 1099/2009, 4.4).

So far, the possibility of performing *shechita* is in the framework of 'derogation' from EU Directive.

Slaughtering techniques/sticking

Death of the animal is induced by sticking (cutting):

«In case of simple stunning or slaughter in accordance with Article 4(4), the two carotid arteries or the vessels from which they arise shall be systematically severed [...].» (Reg. 1099/2009, Annex III, 3, 3:2).

Exsanguination is compulsory regardless of whether previous stunning was carried out or not. Further precautions are requested for slaughter without stunning:

«Slaughter without stunning requires an accurate cut of the throat with a sharp knife to minimise suffering. In addition, animals that are not mechanically restrained after the cut are likely to endure a slower bleeding

process and, thereby, prolonged unnecessary suffering.» (Reg. 1099/2009, Whereas, 43).

Shechita responds to these requirements. *Shechita* involves the severing of the trachea and oesophagus and of all jugular veins. This is due to their anatomical proximity. Also the carotid arteries are cut, due to depth of the incision. *Shechita* is performed with a particularly sharp knife, without any detectable defects (Karo 1563a) and only on a fully restrained animal (Chaim Sofer about 1900b).

The *shechita* knife is proportional to the size of the animal (at least “twice the width of the neck”) (Isserless about 1570b), which means around 25 cm for small ruminants (sheep and goats) and greater than 40-45 cm for adult cattle. Using a shorter knife is against this world-wide Jewish custom and it nullifies the *shechita* (Isserless about 1570b), for an example, it is not allowed to slaughter a calf with the knife used for poultry (14-16 cm) (Chaim Sofer about 1900a). Independent scientists often emphasize the “long, straight, razor sharp” *shechita* knives (Grandin 1994, Grandin 2014) (Figure 4).

Scientists and Jewish scholars arrive at the same conclusion that if the knife is too short, “the tip may gouge the wound” (Grandin 2014) – “[...] the knife stuck in the *shechita* cut and it will nullify the *shechita* because of pressing, interruption and tearing” (Chaim Sofer about 1900a). These measures, in addition to the height of the blade and perfect sharpness, allow the severing of all jugulars and carotids in almost all cases with a rapid single stroke (Grandin and Regenstein 1994), causing a sudden drop of arterial pressure to the brain (Levinger 2004, Rosen 2004), and a fast and massive blood loss, including arterial bleeding (Levinger 2004, Rosen 2004). No indications have been found for which this massive haemorrhage may be influenced by the animals’ position, either right up (when correctly restrained) or reverse, apart from physical restrictions on the neck from metal parts of the restraint device which should be avoided (Grandin and Regenstein 1994, FAO 2004).

Annex IV of EU 1099/2009, with respect to slaughter without stunning, also prescribes the “appropriate use and maintenance of bleeding knives”.



Figure 4. *Shechita* knife for large ruminants.

In fact, checking of the *shechita* knife is mandatory performed after each slaughter (Karo 1563c) and before the next (Karo 1563b); re-sharpening when necessary and then checking again: “and if he did not check, he will not slaughter” (Karo 1563b). The *shochet* is always provided with a replacement knife and a whetstone-sharpener, for the purpose of ensuring availability of the right tool for performing the *shechita*.

Pain management

Annex IV of Reg.1099/2009, with respect to slaughter without stunning, also prescribes “monitoring the absence of signs of life” before proceeding with the next procedures.

Practices exist which are considered painful or particularly stressful to the animal, and one of these is intervention on the animal after the cut but before reaching unconsciousness.

«Further dressing or scalding shall only be performed once the absence of signs of life of the animal has been verified.» (Reg. 1099/2009, Annex III, 3:2).

«Measuring the lack of consciousness and sensibility of an animal is complex and needs to be performed under scientifically approved methodology. Monitoring through indicators, however, should be carried out to evaluate the efficiency of the procedure under practical conditions.» (Reg. 1099/2009, Whereas, 20).

In addition to the restraint of animals in unnatural positions, opposition to *shechita* has developed regarding the onset of unconsciousness and loss of sensibility to pain, after the cut. Advocates of *shechita*, claim, since the ‘90’s and until today, that “when a *shochet* uses a rapid cutting stroke, 95% of the calves collapse almost immediately. When a slower, less decisive stroke was used, there was an increased incidence of prolonged sensibility” (Grandin and Regenstein 1994, Grandin 2014) which can be noted in up to 30% of the calves and for up to 30 seconds (Grandin and Regenstein 1994).

Opponents to *shechita* insist that pain is an issue mainly on the basis of experiments that they performed by themselves, without the involvement of *shochatim* at all, making use of:

- knives not suitable for *shechita* being too short: average length was 24-25 cm in cattle, instead of 40 - 45 cm or more (Grandin 2014, Grandin 2010, Gibson et al. 2009, Candotti and Diegoli 2009);
- sharpening procedures not suitable or forbidden by Jewish *halacha*; even considered incorrect by other scientists (Grandin 2014, Grandin 2010);

- measuring systems (of electrical activity of the brain) using parameters which have been opposed to by other scientists: assessment of pain is considered different from onset of unconsciousness (Grandin and Regenstein 1994, Rosen 2004).

However, there are cases in which, even during these 'ritual-like' slaughter trials (with inappropriate tools as described above) researchers noted no back-down reactions or defence reflexes (Candotti and Diegoli 2009) and little or no reaction during the cut (Bager et al. 1992).

Unconsciousness evaluation and times

After the cut of the animals *without* prior stunning, the main issue is represented by the wound management before loss of consciousness, where disturbing the edges of the incision is likely to cause pain (Grandin 1994). The European Food Safety Authority explains how, following a cut without stunning, a "gradual unconsciousness" is reached, followed by death as a result of brain ischemia due to exsanguination. This unconscious state must be evaluated before proceeding with the next operations (EFSA 2013).

«Where, for the purpose of Article 4(4), animals are killed without prior stunning, persons responsible for slaughtering shall carry out systematic checks to ensure that the animals do not present any signs of consciousness or sensibility before being released from restraint and do not present any sign of life before undergoing dressing or scalding.» (Reg. 1099/2009, 5,2).

Also in slaughtered animals *with* prior stunning, sufficient time should be left for the animal to die following exsanguination and before starting invasive dressing procedures such as scalding or skinning (Verhoever et al. 2015), especially if stunning does not physically destroy the brain (Verhoever et al. 2015). As a standard operation procedure in stunned animals, shackling precedes sticking or slaughtering, so far inducing welfare concerns in case of unsuccessful stunning or delayed sticking.

In the course of well-practiced *shechita*, the time interval between cut and unconsciousness is between 2-5 seconds in sheep and goats, and 7-20 seconds in cattle, this variation being due to differences in the circulatory system of the central nervous system (CNS) among cattle, sheep, and goats (Levinger 2004, Grandin and Regenstein, Grandin 2014, Rosen 2004). With respect to the mentioned times above, some authors relate to a much quicker unconscious state, as a consequence of the drastic fall in blood pressure to the CNS (Levinger 2004, Rosen 2004), when both carotids are severed: in

facts, due to hydrodynamic effects (for which blood would flow according to the lower resistance route) a drastic fall of collateral circulation (via the vertebral arteries) also occurs (Levinger 2004, Rosen 2004) very quickly (0.3 to 2.4 seconds) (Levinger 2004), down to 20% of original pressure (Levinger 2004). Summarizing other works, Bager (Bager et al. 1992) also emphasised that in the presence of such a reduced blood pressure a redistribution of cerebral blood-flow occurs away from cortical grey matter, aimed to preserve vital functions at lower levels of CNS (Bager et al. 1992). Similarly, cortical function is not maintained or re-established even when available blood-flow is conveyed through the brain via alternate pathways in the course of clamping of both carotids (Gibson et al. 2009). Accidents during routine husbandry procedures, with pressure on the carotid arteries, can kill cattle within 30 seconds (Grandin and Regenstein 1994).

Management of the animal in this time interval is of utmost importance for an efficacious and painless (or reduced pain) *shechita*, at the point in time that the animal reaches a state of irreversible unconsciousness.

DIALREL (the EC funded project aiming to Encouraging Dialogue on issues of Religious Slaughter)⁴ gives to unconsciousness a definition similar to what is supported by anaesthetists:

«Unconsciousness is a state of unawareness (loss of consciousness) in which there is temporary or permanent disruption to brain function. As a consequence the individual is unable to respond to normal stimuli, including pain.» (Holleben et al. 2010).

"Neck wound and the vessels have to stay open in the best way achievable to enable fast bleeding and prompt loss of consciousness." (Holleben et al. 2010).

The managing of the wound before loss of consciousness is of primary importance: disturbing, touching the edges of the incision or bumping it against the restraint or other equipment, will cause pain (Grandin 1994). Observations also indicated that the head must be restrained in such a manner that the incision does not close back over the knife (Grandin 1994). Cattle and sheep struggle violently if the edges of the incision touch during the cut (Grandin 1994).

The issue, from a physiologic point of view, is whether a quick, decisive cut induced by a razor-sharp knife and left untouched, would convey pain stimulus to CNS. Different electro-cortical activities can be associated with insensibility (Bager et al. 1992);

⁴ <http://www.dialrel.eu/>.

delay of complete loss of cortical activity (in slaughtered animals without prior stunning) does not mean by itself delay of loss of sensibility (Bager *et al.* 1992). A delayed attainment of an isoelectric Electro Cortical Activity (ECoG) does not indicate that the animal is sensible (Bager *et al.* 1992); there is no consensus or ultimate answer about distress induced by a complete cut of both carotids in animals without prior stunning (Verhoven *et al.* 2015). Rosen (Rosen 2004) summarised studies in which the loss of wakefulness during the *shechita* resembles the same changes as in anesthetized patients: i.e. changes in electro-cortical activities (passage from the EEG α -waves to EEG β -waves) in a time-frame of 3 to 7 seconds after the cut. At the same time, some brain electrical activity can be demonstrated in stunned (captive bolt) or even in beheaded animals (Rosen 2004) raising concerns with respect to considering a 'flat' (iso-electric) brain-electrical activity as indicator of insensibility to pain.

Sensibility of an animal is mainly represented by its ability to feel the pain. In general we can assume an animal as insensible when it does not show reflexes or reactions to stimuli like sounds, odours, light, or physical contact.

Notes by Grandin (Grandin and Regenstein 1994, Grandin 1994) studying about 3000 animals (cattle, veal calves) after *shechita* (in the upright position) in different USA abattoirs, gave the following results:

- in general, animals did not show any reaction. There was a slight flinch when the blade first touched the throat. This flinch was much less vigorous than an animal's reaction to an ear tag punch. There was no further reaction as the cut proceeded;
- both carotids were severed in all animals;
- some animals in the modified ASPCA pen were held so loosely by the head-holder and rear-pusher gate that they could have easily pulled away from the knife;
- the throat cut caused a much smaller reaction than penetration of the 'flight zone';
- body reactions during the throat cut were much less than the body reactions and squirming that occurred during testing of various chin lifts and forehead hold-down brackets;
- further observations in bulls (Holstein, Angus, Charolais) indicated that they did not react to the cut.

Furthermore, lack of reaction was noted by other researchers (Candotti and Diegoli 2009, Bager *et al.* 1992).

When comparing *shechita*, within different slaughter plants, Grandin also underlined the importance

of a non-stressful restraint, in order to avoid more vigorous reactions by animals at the time of restraint (Grandin 2014) and an "optimal" *shechita*, implying severing of both carotids in a single, quick, and decisive cut (Grandin and Regenstein 1994).

It should also be noted that the number of *shechita* procedures inspected by Grandin was significantly higher than those of other observers and researchers of "*shechita*-like" simulations performed by some researchers, with knives defined as inadequate (Grandin 2010, Grandin 2014)

Death of the animal and starting of next procedure

Following a professional *shechita*, with the proper long and razor-sharp knife, the wound must remain untouched for the time needed by the animal (seconds) to reach irreversible unconsciousness. At the same time the animal must be kept completely restrained – body and head – by gentle extension of the neck by the chin-block (or chin-lift if in an upright position).

American Society for the Prevention of Animal Cruelty pens also allow some variations on pressure applied to the body of the animal, still restrained, and immediately after the cut, in order to favour muscles relaxation and a more substantial blood loss. Instructions by pen suppliers must be followed when activating the pen. The following operations (shackling, dressing) will start only after unconsciousness examination.

Discussion

The discussion focuses on 2 aspects, technical and legislative.

Technical aspect

Management of *shechita* implies (without *halachich* conclusions):

Non-stressful restraint of the animal (Grandin 2014):

- possibility of restraint in upright position (ASPCA, OU) as an alternative to upside down position (Weinberg and others) according to local legislation and/or local community requirements;
- automatic suspension and holding of neck and chin in gentle extension;
- short-term restraint: the time from terminating the restraint to the cut should not exceed 10 seconds (Grandin and Regenstein 1994, SANCO 2015). Too long restraint is associated with struggling; in upside down position, a

prolonged restraint (more than 90 seconds) is more stressful than upright restraint (Grandin 2014);

- the animal is introduced into the pen only when the *shochet* is ready, with an already tested and re-sharpened knife (Reg. 1099/2009, art. 9, 3)⁵;
- quick, decisive cut, with severance of both the carotids. Aim at 95% cut of both the carotids (5% is considered a tolerated failure rate); consider changing the *shochet* in case of repeated failures or sloppy slaughter;
- as an alternative (in accordance with local Community Authority), immediately perform a second cut. Or:
 - put in place a preliminary agreement for stunning after unsuccessful cut, even at risk of disqualifying the *shechita* (according to some Communities);
 - careful check of *shochet's* pedestal, (height and size) which will allow and aid the *shochet* to accomplish the incision with a quick and decisive operation.

Some studies (Grandin 2014, Grandin 2012), deal with implementation of the cut at a level of 1st cervical vertebra (C1), in terms of:

- reduction of risk of carotid retraction and occlusion ('ballooning'), with formation of false aneurism and slowing of blood loss;
- severing the Vagus nerve's derivations to the respiratory tract, thus making the animal insensible or, at least, less sensitive to possible blood aspiration.

According to *halacha*, the location for a *kosher* cut is relatively wide, starting few centimetres down the cricoid cartilage, down to the base of the neck before the first rib (Karo 1563e). However, the cut is generally performed in the region of the upper third of the neck (Isserless about 1570c). The full restraint of the head before *shechita*, as also requested by EU 1099/2009 (art. 15, 2) (either in upright or upside down position) clearly exposes the cricoid cartilage and the suitable area to the *shochet* for *shechita*.

A well performed cut a few centimetres down the cricoid cartilage (Karo 1563e) will correspond to the caudal cervical vertebrae C1 or C1/C2 interspace, as in accordance with preliminary studies in the USA (Grandin 2012). While it is true that the *shechita* cut may be made that high, *shochatim* (ritual slaughtermen) will object to a too generic 'high cut' requests, based on the concern they will cut too

high and outside of the permissible range above mentioned.

It should be absolutely prohibited the further handling of the animal after *shechita* until examination for loss of consciousness has been verified. This should include:

- prohibition to touch the borders of the wound/cut and the surrounding tissues;
- maintaining the restraint for a minimal time frame considered as enough to reach irreversible unconsciousness (about 30 seconds);
- in Jewish *halacha*, the ensuring of the exactness of *shechita* ('*Bedikath hasimanim*' - sign check) is mandatory and it is performed at the site of the cut area. It can be carried out after this 30 seconds time interval, because a slight delay is allowed (Isserless about 1570d);
- the examination of the state of unconsciousness should be performed not earlier than 30 seconds from cut using multiple indicators (corneal, palpebral reflex, pupil dilatation, prolapsed tongue, etc.) (EFSA 2013, Verhoeven *et al.* 2015);
- prohibition to activate and/or release the restraining pen;
- possible release of pressure on the back/tail and flanks only according to the manufacturer's recommendations;
- re-sharpening and checking the knife just before next *shechita* with the availability of a spare knife.

Legislative aspect

EU 1099/2009 states:

«Hunting or recreational fishing activities take place in a context where conditions of killing are very different from the ones used for farmed animals and hunting is subject to specific legislation. It is therefore appropriate to exclude killings taking place during hunting or recreational fishing from the scope of this Regulation.» (EU 1099/2009, Whereas, 14).

In case of private consumption:

«The slaughter of poultry, rabbits and hares for private domestic consumption is not performed on a scale likely to affect the competitiveness of commercial slaughterhouses. Similarly, the necessary efforts required from public authorities to detect and control such operations would not be proportionate to the potential problems to be solved. It is, therefore,

⁵ According to author's experience as Animal Welfare Inspector at Israeli slaughterhouses, these aspects can be easily achieved in accordance with a short restraint time and in collaboration with the *shochet*: a 10 second restraint time is achievable.

appropriate to exclude those operations from the scope of this Regulation.» (Reg. 1099/2009, Whereas, 17).

«Only the requirements of Article 3 (1) (sparing any avoidable pain, distress or suffering during killing); Article 4 (1) (Animals shall only be killed after stunning) and Article 7 (1) (Killing and related operations shall only be carried out by persons with the appropriate level of competence) shall apply to the slaughtering of animals, other than poultry, rabbits and hares, and the related operations outside of a slaughterhouse by their owner or by a person under the responsibility and supervision of the owner, for private domestic consumption.» (Reg. 1099/2009, 10).

Jews do not have alternatives to *shechita* other than in slaughterhouses. The possibility of slaughter for private consumption is not realistic both as there are almost no rural Jewish communities in the EU, and even if there were more Jews in the rural communities, the rules of *shechita* do not allow for it to be performed by unskilled or unauthorized persons.

Also hunting and gaming do not offer any alternative, both are not practiced from a cultural point of view and, in any case the meat from hunting is not considered *kosher*.

Reg. 1099/2009 also states:

«In addition, cultural traditions refer to an inherited, established, or customary pattern of thought, action or behaviour which includes in fact the concept of something transmitted by, or acquired from, a predecessor. They contribute to fostering long-standing social links between generations. Provided that those activities do not affect the market of products of animal origin and are not

motivated by production purposes, it is appropriate to exclude the killing of animals taking place during those events from the scope of this Regulation.» (Reg. 1099/2009, Whereas, 16).

Even if *shechita* still remains a small scale 'productive activity', due to its origin in deeply radicated Jewish cultural traditions, it should be better considered in the framework of the above mentioned Reg. 1099/2009 Whereas, 16. As above, also considering that scarcity of demand, and the higher costs do not impact animal-origin food markets,

The Jewish population in EU today is around 1 million. Precise data about *shechita* slaughtering are scarce. The Library Briefing, the Library of the European Parliament, (Needham 2012) reported in 2012 data of *shechita* in the UK: 180,000 between cattle and sheep (50% each) and 1.5 million poultry, corresponding to 300,000 Jewish community. These data, may be considered as representatives of EU Jewish population, Numbers reflect some 300,000 cattle, 300,000 sheep and goats, and 5 million poultry (and up to 10-12 million) per year, when applied to the total Jewish population in EU.

Eurostat provides the data below⁶ relative to yearly slaughtering in Europe (data partially modified and compared to *shechita* production) (Table I). Over 6 billion poultry and over 320 million mammals, between ruminants and pigs, are slaughtered every year in the EU. Eurostat estimates that numbers relative to slaughter 'other than slaughterhouses' are between 7-14 million animals (mammals), that is, 2% to 4,4% of the total (both data for EU 25 or EU 28 Countries, respectively) with respect to slaughters in slaughterhouses. These data should include, among

⁶ <http://ec.europa.eu/eurostat/data>.

Table I. Yearly slaughtering data in the EU (25 or 28 members) in comparison with *shechita*.

Eurostat 2013-2014 (modified)				
Category	Slaughtering data, number of animals		Note	<i>Shechita</i> (estimate) in slaughterhouses
	In slaughterhouses	Other than slaughterhouses		
Cattle	26,000,000	462,000	EU 28	300,000
		193,000	EU 25	
Sheep and goat	45,000,000	9,500,000	EU 28	300,000
		3,600,000	EU 25	
Pigs	250,000,000	4,400,000	EU 28	0
		2,900,000	EU 25	
Poultry	Over 6 billion	No data		10-12 million
Rabbit	No data (update 2008)	No data		0
Total mammals	321,000,000	14,362,000	EU 28	600,000
		6,693,000	EU 25	

others, emergency/farm slaughters, family/rural slaughters, and 'private consumption' slaughters.

EU 1099/2009, Whereas, 47 already underlined the impracticability of having an animal welfare officer in place at small-scale slaughterhouses. Likewise, a systematic welfare check activity (with respect to Article 10, Private consumption) on 7 to 14 million slaughtered sheep, goats, and pigs, is considered totally unrealistic.

Overall the EU population in 2013/2014 was 505 million people⁶. Table II below summarises meat production per person per year: data are presented as number of 'animals' (mammals and poultry) and not in terms of kg of meat per person.

Assuming that UK *shechita* slaughtering data are representative for all the EU Jewish needs, it appears that consumption per person does not differ between Jewish and non-Jewish populations. Pig consumption is compensated by Jews demanding more ruminant meat and, to some extent, poultry. Direct consequences of such a comparison are that further restrictions or even abolition of *shechita* would unquestionably affect basic alimentary needs of the Jewish population and negatively damage their quality of life. The only alternative to this scenario is considering a regular import of kosher meat from USA, South America, Israel, and other countries.

Considering the impact of *shechita* slaughtering in EU, even in comparison to 'other than slaughterhouses' slaughtering data, and also considering the EU 1099/2009 at its Whereas 16 – 'cultural traditions' – it becomes difficult to understand objectives and limits of the mounting and restrictive policies relative to *shechita*, including demands for its abolition. Also, it is difficult to comprehend this in the light of an uninterrupted presence of Jews in Europe (EU and non-EU) for the last 20-22 centuries: does this presence not "reflect concepts of traditions, customary patterns, acquired by predecessors, long-standing links between generations", exactly as described by the EU 1099/2009?

From an emotive point of view, compulsory stunning implies a sort of self-absolved solution with respect

to slaughter: "everything possible has been done in order to avoid unnecessary pain". However, data shows an inherent fallibility of the system. Since the '90s, USA data quantified failures in cattle stunning between 1% (electric) to 1-5% (captive bolt), and up to 15% (Grandin T 1998, Grandin 2011). Reports from UK indicate failures in sheep between 12-14% (electric stunning), around 5% (2.6- 6.6%) in cattle (captive bolt), and up to 36% in pigs (electric stunning) (Fowler 2009).

«Animals may suffer when stunning procedures fail. This Regulation should therefore provide for appropriate back-up stunning equipment to be available to minimise pain, distress or suffering to the animals.» (Reg. 1099/2009, Whereas, 33).

'Inadequate stunning' in bulls, cows, calves, may range from 5% to 19% (Atkinson *et al.* 2013). Differences exist between stun-operators (81% to 95% accurate shot) and according to experience (Atkinson *et al.* 2013). Time frame reactions by operators may be of several seconds, when captive bolt is used. In the same way, stun-to-stick, or stun-to-cut times may be long: up to 80-90 seconds (SANCO Study 2015); 70 to 294 sec (average 105 sec) (Atkinson *et al.* 2013); up to 116 ± 27.4 seconds in re-shot animals (Atkinson *et al.* 2013); enough time to pose serious animal-welfare concerns about correct management of this time-frame.

There is some controversy about the frequency of fail-stunning. The EFSA reported that when using captive bolt stun, 4% to 6.6% of cattle needed a second stun (EFSA 2004). Some countries dispute these figures; it is probably true to say that the frequency of failed-stunning "is not accurately known" as recently reported in UK (Trees and Jordan 2014). Even wider differences exist between different countries: from 3% of the 40% 'high standards' USA plants to 49% of a Mexican plant (Grandin 2014). According to previously illustrated Eurostat data on slaughtered animals, consequences of stunning failures are easily understandable.

Recently EFSA put under discussion again the efficacy of electrical baths for poultry currently in use (EFSA 2014) for its failure in stunning (and even failing in automatic killing after failed stunning) all the birds, with possible conveyance of live-conscious birds to de-feathering (EFSA 2014). Anyway, Council Regulation (EC) N° 1099/2009, which started to apply on 1 January 2013, does not ban the use of the water-bath stunner for poultry despite its welfare disadvantages (SANCO Study 2015). As above, even if alternatives exist (use of gas) but are presently not developed for the small or medium size slaughterhouses, which represent a very important number of establishments in Europe (SANCO Study 2015).

Table II. Assumed meat consumption (calculated in number of animals) per person per year.

Yearly consumption according to populations		
Category	Non Jewish	Jewish
Poultry	12	10 to 12
Sheep and goat	0.11	0.30
Cattle	0.05	0.30
Pig	0.50	0
Mammals total	0.66	0.60

“Recommendations to phase out the use of carbon dioxide for pigs” (EU 1099/2009, Whereas, 6), due to deep stress and the feelings of suffocation induced by lack of oxygen and gasping activities (Grandin 1994) are still under discussion, due to economic implications involved. At present, it cannot be rejected, as there is no commercially viable alternative for certain species like pig (or fur animals) (SANCO Study 2015).

Episodes like this are both significantly higher than absolute numbers of *shechita* in EU, and much higher than failure percentages (or disqualifications) of *shechita* itself.

The mentioned Bo.Rest study reports data of “no both carotids” severed in 13 animals (8 veals and 5 adults) out of 331 observed (228 veals and 103 adults, respectively), worth 3.92% (SANCO Study 2015) [Absolute numbers of (reasonably assumed) unsupervised Private Consumption slaughters (EU 1099/2009, 10) – out of slaughterhouses – are enormously higher than fully supervised *shechita* slaughters in slaughterhouses. At the same time, stunning systems do not seem to allow further technical development. Furthermore legislation, in many cases, does not even require a total efficacious monitoring of animal welfare standards at all slaughter plants:

«Small slaughterhouses predominantly involved in the direct sale of food to the final consumer do not require a complex system of management to implement the general principles of this Regulation. The requirement to have an animal welfare officer in place would therefore be disproportionate to the objectives pursued in those cases and this Regulation should provide for a derogation from that requirement for such slaughterhouses.» (Reg. 1099/2009, Whereas, 47).

Conclusions

“Evaluation of religious slaughter is an area where many people have lost scientific objectivity. This has resulted in biased and selective reviewing of the literature. Politics have interfered with good science.” (Grandin and Regenstein 1994).

The ultimate purposes of *shechita* and conventional slaughtering only apparently overlap:

- the purpose of *shechita* is to obtain meat through an ancient and highly specialized procedure, with a direct implication on every single individual slaughtered animal (along with routine check procedures for every single operation), in which animal welfare

recommendations and procedures *ante litteram* are in place since centuries and more (Ha Levi about 13th). For this purpose, economic and industrial implications are expendable and put as second concerns: *shochatim* (ritual slaughtermen) are more expensive than other slaughtermen; speed of production is low (SANCO Study 2015); costs are higher, etc.;

- conventional slaughtering has as its final objective the supply of healthy and cheap meat. Taking into consideration animal welfare, it utilises techniques and controls on the majority of the slaughtered animals (and not on every single produced animal), with an error margin which *in principle* is not solvable.

Since 1958, the USA clearly identifies as humane slaughter the

“[...] slaughtering in accordance with the ritual requirements of the Jewish faith or any other religious faith that prescribes a method of slaughter whereby the animal suffers loss of consciousness by anaemia of the brain caused by the simultaneous and instantaneous severance of the carotid arteries with a sharp instrument and handling in connection with such slaughtering.” (Human Slaughter Act 2015).

Once defined the *shechita* as humane slaughter, then

“nothing in this chapter shall be construed to prohibit, abridge, or in any way hinder the religious freedom of any person or group. Notwithstanding any other provision of this chapter, in order to protect freedom of religion, ritual slaughter and the handling or other preparation of livestock for ritual slaughter are exempted from the terms of this chapter.” (Human Slaughter Act 2015) being the freedom of religion granted by USA Constitution.

«Killing animals may induce pain, distress, fear or other forms of suffering to the animals even under the best available technical conditions. Certain operations related to the killing may be stressful and any stunning technique presents certain drawbacks.» (Reg. 1099/2009, Whereas, 2).

Notwithstanding the above-mentioned concepts, such a relative inadequacy is still tolerated in the EU in contrast to a growing intolerance towards *shechita*.

We should ask whether, in the wider frame of the ‘five animal freedoms’ and in respect to animals for slaughter as sentient beings, some European traditions – certainly not Jewish – should be criticized

or even forbidden. Or, vice versa, why are these acknowledged as compatible with *cultural traditions*, established, or *customary patterns*, while *shechita*, more than 20 centuries old in Europe, is not.

Hunting, for example, is considered as a positive value in EU: "Hunting is an activity that provides significant social, cultural, economic and environmental benefits in different regions of the European Union". It has its own EU organization representing some 7 million hunters; it is largely practiced all over EU; hunter organizations claim to playing a key role in laying down clear rules for regulated hunting and oppose illegal hunting. The 2013 results of a EU funded project (DG SANCO 6926, 2013) concerning 1 hunting season in 4 member States reveals killing of 754,103 wild boars and 2,072,000 wild ruminants (red deer, roe deer, fallow deer, mouflon, chamois, moose). On the opposite, Jewish Scholars oppose to hunting for fun, based on useless destruction of live beings; cruelty; hazardous; as summarized in Landau (Landau 1755).

It is worth noting that countries which have abolished *shechita*, have not abolished hunting including Sweden, Norway, and Switzerland. Denmark (where *shechita* has been abolished) permits whale hunting. As of the end of November 2008, whales are even no longer considered fit for human consumption because of the levels of toxins, so that their hunting should be definitely be considered a game.

Furthermore, in 2014 the EU Parliament confirmed the subsidy to bullfighting (CNN Report 2014), worth 130 million Euro.

Animal welfare standards can differ considerably in different contexts. Standards are under constant review; legislators, academics, scholars, may arrive at different conclusions about same subject. Animal welfare is, in general, the result of a merging of scientific evidence, values, ideals, compromises

(Hewson 2003), in which positive values and inputs of communities, majority and minorities, should be also taken into account.

«[...]Therefore, pain, distress or suffering should be considered as avoidable when business operators or any person involved in the killing of animals breach one of the requirements of this Regulation or use permitted practices without reflecting the state of the art, thereby inducing by negligence or intention, pain, distress or suffering to the animals.» (Reg. 1099/2009, Whereas, 2).

Killing a live being is never a pleasant event and every slaughtering system presents inaccuracies and, so far, possibilities of inducing pain to the animal. In the Jewish world, it is possible to state that animal killing occurs exclusively in slaughtering for food requirements, and no alternatives exist for meat supply. It is also possible to state that all *shechita* slaughters are performed by skilled professionals, duly instructed, routinely scrutinized, and no room exists for amateurs or uncontrolled slaughters even for private consumption. This, in fact, would be considered as unfit for consumption – non-kosher.

Improvements on animal welfare (and work safety) largely depend on the progress realised on operating procedures and skills of the personnel (Sanco Study 2015).

Shechita, due to its intrinsic nature and due to its routine controls on every single action and for every single individual animal, cannot possibly be framed as negligent or intentionally painful, distressing or inducing suffering to animals. Again, the question to be discussed is whether the final result counts and on every slaughtered head, or an excellent/good intention with errors' margin in principle considered as 'acceptable'.

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