Ethics for the Living World

Alternative Methods and New Strategies for the Protection of Nonhuman Animals

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ABSTRACT

The use of animals in laboratories is a controversial issue involving much dispute between the researchers who support animal experimentation and those who are in favor of its abolishment. The former, whilst criticizing the emotional behavior of those who oppose it, consider experimentation on animals unavoidable, whereas the latter criticize animal experiments and the underlying logic as erroneous considering its methods unscientific and therefore misleading. This paper stems from the idea of researching into possible ways of developing or improving new alternative strategies for animal experimentation by finding adequate solutions beyond dogmatic opposition in the context of the current European Directive 2010/63/EU (the main reference point for the experimentation on animals) for the protection of animals used for scientific purposes. More specifically the paper aims at offering the readers a working proposal, while duly respecting the protocol for the post mortem donation of their own corpses for the purposes of study and research. As we believe diseases need to be cured and not only treated, we are advocating post mortem studies on organs which could lead to the discovery of the causes of unknown etiological pathologies. The commitment to the implementation of constantly new and innovative alternatives concerning animal experimentation is right and proper, especially in the light of the 'enormous debt' which the Italian National Bioethics Committee stated that mankind has towards nonhuman living beings.

Keywords: Animal experiments, animal ethics, animal use, alternative methods, ethics committee, post mortem body donations, human tissue and human organ donation, corpse didactics, animal protection, multiple sclerosis.

1. In search of new openings

Every year millions of animals are used in research laboratories throughout Europe (Matthews 2008, 95). Are they an indispensable resource for science (as well as for chemical and cosmetic industries and even military research) or merely needless victims that could be saved from such practices?

The controversy of animal experimentation (AE), recently brought into debate again by the European legislation (2010/63/EU), not only concerns the moral aspects of practices which cause suffering to sentient beings but also involves the scientific validity of the experimental methodology on animals, which is accused of being fallacious and misleading, as it cannot be applied to human beings (Shanks, Greek, and Greek 2009, 2; Greek, Pippus, and Hansen 2012, 13).

Can it be presumed that current medical and scientific progress would never have been achieved without the use of animals? Is it still absolutely necessary to experiment on animals nowadays? Do valid alternative methods exist? Could such methods represent a fundamental resource not only for ethical or 'compassionate' reasons towards animal species, but also for scientific convenience?

In this research we are reluctant to venture into the thorny debate on usefulness, or into any discussion supporting the utmost necessity of animal experimentation in scientific research, not to mention the relevant prejudices in an intrinsically ethical valuation (before even considering the legitimacy) of an attitude of domination towards other living species.

In the light of the ever-increasing respect towards other nonhuman sentient beings what we intend to propose, in somewhat narrowed down terms, is an attempt to reach a rational balance between an outright rejection of animal experimentation on one hand (on the basis of the principle of human-animal inter-specific equality) and a similarly apodictic claim to freedom, self-control and responsibility of researchers on the other.

The breakthroughs offered by the development of advanced research methods call for new perspectives able to strike the right balance between the necessity for scientific knowledge and respect for the lives of animals.

From this perspective, by investigating the ethical and scientific reasons underlying the possibility of implementing actions capable of promoting the adoption of alternative methods (AM) we intend to offer new starting points for reflection, particularly regarding the *post mortem* donation of corpses used for research studies and development.

2. Ethical motivation of AM

The question of the ethics of AE represents one of the most critical issues of the human-animal relationship about which the ongoing debates seem to be in a constant position of stalemate, between absolutely irreconcilable positions (Balls 2012, 189).

The complexity of these questions together with the relevance of the interests and values involved in animal experimentation brings us back to one of the most crucial questions from which bioethics originates: the tension between what is attainable and what is currently being achieved, or, in other words, the tension between technical possibilities and legal ethics. At least two fundamental issues can be identified as far as bioethics is concerned:

6. The problem of limits of AE.
7. The problem of the intrinsic legality of such a practice.

The problems operate on different levels of complexity, the first of which is positioned within a discussion that presupposes the morality of animal experimentation and strives to regulate it by introducing directives and criteria. The second is an approach based on 'the equal considerations of the interests involved' of inter-specific equality, which criticizes and invalidates the very presuppositions on which AE is based in order to investigate its validity and evaluate the underlying motivations. The first case concerns the limits with which the spectator must comply, the duties imposed, and the measures to be enforced in order to avoid needless suffering to animals. In the second case, we wonder whether we may or we should interfere with living beings when it merely results in being advantageous to mankind and if, and to what extent, humans have the right to take advantage of the lives and the integrity of nonhumans.

However, biomedical research in general does not currently seem able to reject animal experimentation claiming that it has allowed the acquisition of a substantial part of the present knowledge in biomedical fields which otherwise would not have been achieved. The achievement of important scientific results and the advancement of biomedical knowledge should not, however, imply any automatic evidence of the ethics of animal experimentation, nor diminish the obligation to reduce pain, suffering and damage to the minimum (Ciliberti 2008, 253).

The ever increasing possibilities that technology offers mankind to exploit and dominate other living beings imposes the need to reflect upon the ethics of responsibility which emerges from the recognition of the intrinsic value of animals (their inherent value), as completely independent of the human interest in the usefulness of animals as well as the affection or compassion towards other species is concerned (Battaglia 2010).

Nevertheless, over the last ten years the development of research combined with a growing awareness of the extension of our moral duties beyond species borders urged as well the scientific sector to revise its debasing nonhuman animals to mere 'things' towards which humans have absolutely no sense of duty. The acknowledgement of animals as sentient beings endowed with interests has, in fact, brought about an increased interest in the well-being of animals and a growing expansion of the 3Rs model (*Replacement*, *Reduction*, *Refinement*), coined by William Russell and Rex Burch. Although this model sustains the priority of interests of human species in relation to those of animals it intends to proceed with a comparative evaluation in terms of a costs/benefits analysis.

The ever-increasing sufferance caused, combined with both an increase in the amount and variety of animals used, prompts the formation of the so-called 'ethical cost' of an experiment, where the scientific advantages and potential benefits for human beings can be evaluated.

The ratio between the attained benefits and the suffering inflicted on animals, as suggested by the recent European Union directive, is currently the most advanced model as far as the protection of animals is concerned with respect to human awareness regarding the suffering and the quality of the animals' lives. It has been at least welcomed on behalf of the more sensitive researchers. Such principles offer a means of valuation which many researchers use in order to establish whether their experiments are justifiable from the ethical point of view.

In Italy (see *tab. 1* and *tab. 2*), the National Bioethics Committee (NBC) explicitly refers to the 3Rs model in the document *Metodologie alternative, Comitati etici e obiezione di coscienza alla sperimentazione animale*. The paper arises from the need to reconcile the different values, all of which deserve recognition, in a balanced and unanimous way, including the well-being of human beings, the promotion of scientific research, the reduction of the suffering caused to animals subjected to experimentation, the well-being of the animals used in veterinary experimentation, and respect for the delicacy of the researchers' personal convictions (Comitato Nazionale per la Bioetica 2009).

An extremely positive sign towards the implementation of the 3Rs method is the fact that The European Community has increased research funding over the last few years, as can be verified in the Seventh Framework Program (2007-2013) which provides funding for programs aimed at developing alternatives to animal testing in medical research.

Furthermore, the new European Directive (2010/63/EU) proposes to reinforce the protection of animals still being used in scientific procedures and to provide a stronger impulse to generate an increase in the promo-

tion of development, validity, acceptance and application of alternative methods. As a result, the 3Rs principles may be fully applied to the use of animals in experiments with the ultimate aim of completely replacing all procedures carried out on living animals.

Table 1. – Individual and species used in experiments in Italy.

Species	2009	2008	2007
Mice	553,817	553	556,497
Rats	200,301	230,347	252,277
Birds	31,798	32,241	33,209
Fish	14,958	13,955	30,698
Guinea Pigs	12,993	13,875	11,819
Rabbits	8,657	9,706	11,002
Pigs	2,485	3,607	3,401
Amphibia	2,304	2,432	2,996
Dogs	607	943	1,201
Hamsters	526	717	1,089
Old world monkeys	460	344	386
Cattles	453	462	391
Sheep	375	469	542
Reptiles	309	454	316
Other Mammals	173	151	244
Other rodents	102	1,235	1,641
New world monkeys	42	18	30
Horses	31	46	109
Quails	23	249	0
Ferrets	20	0	0
Goats	19	41	56
Cats	0	26	8
Total	830,453	864,318	908,002

According to data published in the *Official Journal* no. 53 of 5/3/2011, 2,602,773 animals were experimented on in the three years 2007, 2008, and 2009 – numbers that have remained unchanged since 2000.

Table 2. – Species and the number of individuals used in the most important areas of basic research in 2009.

Species	BR	RD	MT	TS	RE
Mice	334,463	125,407	27,649 5,658	28,468	10
Rats	73,037	41,780	70,643 162	12,923	544
Birds	7,600	1,801	4 15,531	6,166	0
Fish	8,093	600	0 3,050	2,490	0
Guinea Pigs	1,577	1,882	4,587 691	4,206	0
Rabbits	715	749	4,496 518	2,108	0
Pigs	632	246	0 885	102	372
Amphibia	1,937	0	0 0	23	0
Dogs	0	62	0 0	545	0
Hamsters	349	0	0 0	147	0
Old world monkeys	16	56	44 0	344	0
Cattles	174	16	0 82	33	0
Sheep	120	208	4 23	18	0
Reptiles	309	0	0 0	0	0
Other Mammals	173	0	0 0	0	0
Other rodents	102	0	0 0	0	0
New world monkeys	0	42	0 0	0	0
Horses	0	0	0 0	0	0
Quails	3	20	0 0	0	0
Ferrets	20	0	0 0	0	0
Goats	9	9	0 1	0	0
Cats	0	0	0 0	0	0
Total	429,329	172,878	107,427 26,631	57,573	926

BR: Basic Research; RD: Research and Development of Drugs and Devices for Human and Veterinary Medicine; MT: Mandatory Testing for the Control of Drugs for Humans and Animals; TS: Toxicology and Safety Evaluation; RE: Research Education.

3. Scientific reasons for AM

One of the fundamental points on which AE is based is the similarity between humans and animals, regarding the extrapolation as well as the possibility of transferring data from one species to another (Van der Worp et al. 2010, 514).

However, medicine is not based on such generic terms: 'similar', in biology, is an overly vague term. The same is true even with regard to human beings: there are several undeniable factors which medicine must take into account when approaching every single case. Indeed, the identity of gender, ethnic group, state of health, diet, age, life-styles, and many more aspects can strongly influence reactions to drugs in very significant ways (Bernardesca and Maibach 1988, 65; Gear et al. 1996, 1184).

Moreover, the research that has been carried out on identical twins draws our attention to the possibility of different reactions to the same molecule or chemical substance and these differences increase with the physiological phenomenon of the process of ageing (Fraga et al. 2005, 10604).

The paper by Perel and his colleagues (2007) has made an important methodological contribution to understanding why animal studies cannot predict human reactions. The authors conducted a series of systematic reviews of animal research relevant to studies in humans in six research areas: corticosteroids for head injury; antifibrinolytics to reduce bleeding; tissue plasminogen activator to reduce death and disability after a stroke; tirilazad for ischaemic stroke; antenatal corticosteroids to reduce lung morbidity and death in preterm newborns; and bisphosphonates to increase bone mineral density. In three of the above mentioned research areas the animal studies and human trials were substantially discordant; in three others the results were essentially similar. In all areas of research, however, major methodological limitations of the animal research and evidence of widespread publication bias were identified (Perel et al. 2007, 197).

From the analysis of 51 series of experiments on animals conducted by the University of Würzburg, Erlangen and Regensberg in Germany, it emerged that 99.7% of the results obtained from research on 5,000 animals could not be clinically applied whereas in the remaining 0.3% there was no application whatsoever. The authors concluded that the collective health benefits deriving from animal experimentation had been overestimated (Lindl and Voelkel 2011, 242).

The renowned anti-flammatory drug, based on Rofecoxib, both effective and well tolerated on animals, was consequently utilized by a large number of patients suffering from forms of arthritis. Nevertheless, in 2004 it was removed from the market after having caused an estimated 320,000

cardio and cerebrovascular incidents worldwide and 140,000 deaths (Topol 2004, 1707). Similarly, Cerivastatine (used to reduce cholesterol in the blood stream, causing heart attacks and strokes) was withdrawn from the market due to the highly adverse effects produced (Staffa, Chang, and Green 2002, 539).

Also, Hormone Replacement Therapy (HRT) prescribed to menopausal women has been proved to cause the risk of developing adverse effects, which can be very serious (cardiovascular disease, mammary carcinomes, thromboses, strokes, etc.). Yet in the tests on rodents (mice, rabbits), pigs and even primates (monkeys) the demonstrated effects were quite the opposite, which led to these drugs being regularly prescribed by gynecologists, cardiologists and general practitioners (GPs) (Couzin 2003, 1136).

Recently the new molecule to combat multiple scleroses, Fingolimod, showed a relevant cardiotoxicity, which had not emerged on animal testing. Some of the patients who were prescribed this drug, in conjunction with other drugs to combat multiple sclerosis, died, hence only the lowest tested daily dose, 0.5 mg, was subjected to the approval of the FDA. The FDA authorized Fingolimod as a front line drug, but they required 10 post-marketing research studies, during one of which a lower dose compared to the one that had been previously approved was to be administered. The European Agency for drugs, EMA (European Medicine Agency), furthermore limited the use of Fingolimod, considering it a drug belonging to the second choice.

The outcome was unambiguous: even though 97 clinically orientated publications containing citations of the above-mentioned publications were found (8% of all citations), only 4 publications evidenced a direct correlation between the results from animal experiments and observations in humans (0.3%). However, even in the 4 cases cited the hypotheses that had been verified successfully in the animal experiment subsequently failed in every respect (Lindl, Voelkel, and Kolar 2005, 143).

On the other hand, a considerable number of molecules which could be effective without causing damage or manifesting limited side effects on human beings are rejected as they are toxic, harmful mutagens/carcinogenic on animals (Hartung 2009, 45).

The animals most commonly used in laboratories are rodents (rats and mice) chosen for both the low costs and minimal upkeep incurred and also for the undeniable question of ethics. Rodents are incapable of vomiting as they lack the primal defense mechanism against the ingestion of food substances and/or toxic molecules typical of human physiology.

Such evidence suggests that attempts to protect human health should be pursued through alternative hypotheses of study (Abbott 2005, 144).

4. What alternatives to animal experimentation exist? New prospects

Alternative methods which have totally replaced AE have been authorized in various establishments: e.g. pregnancy testing, mutagen testing, alternative technology for the production of monoclonal antibodies in mouse ascite through fibre Bioreactors, etc.

The modern techniques of imaging (e.g. computerized axial tomography and magnetic resonance) are used in the study of the human brain with minimal use of primates, *in vitro* culture of human cells and tissue are used in many fields of research such as cosmetology, toxicology, etc.; whereas other methods based directly on human beings (clinical research, epidemiology, statistics, etc.) have proved to be effective in the study of disease. Furthermore, experiments using electronic simulation are, due to the mathematical models combined with special software, able to predict the biological effects of some chemical compositions.

In the didactic field, video, computerized simulations, experiments on cellular culture and clinical practices constitute effective resources capable of significantly reducing the number of animals sacrificed.

An increased interest towards such approaches, several of which have already been validated by the ECVAM (European Centre for the Validation of Alternative Methods), has also prompted their application in highly innovative fields such as in surgery and microsurgery. Both human and animal dummies are used and have attained such a satisfactory level that they almost perfectly simulate the various layers of the skin, including the subcutaneous layers, and internal organs with the possibility of performing operations using cleavage planes applicable to the living.

These advancements, therefore, allow an evaluation of the adequacy and the effectiveness of surgical operations.

Other research fields deserve further development. For instance, research on spontaneous pathologies in animals would help in avoiding both any artificial reproduction of human diseases and all the implications connected to the lack of overlap of non-natural pathologies in the animals studied (Hackam and Redelmeier 2006, 1731; Knight, Bailey, and Balcombe 2006, 139).

Clearly the time taken to develop these approaches, combined with their effectiveness, are directly proportional to the economic and human resources required to carry out innovative research capable of creating a breakthrough.

As far as the alternative strategies of AE are concerned, the insufficient availability of human organs and tissues represents a crucial obstacle in developing the research.

On the other hand, the importance of *post mortem* investigations has been proved by the highly relevant data obtained from the autopsies carried out on deceased bodies including those dating back to the distant past, as has emerged in legal cases or anthropological studies performed on mummies or archeological biological evidence. Indeed, medical science not only sets out to find a cure, but also, and above all, to heal and consequently should make investigations first and foremost into the cause of the pathologies that afflict humanity at large.

Despite the fact that the system of organ donation is well organized in most European countries, there are no guidelines set out regarding the distribution of non-transplantable material for research purposes. In practice, the distribution of organs and tissue for research purposes is only obtained from inside the hospitals or directly through individual researchers and doctors via personal contacts.

It is also important to add that many organs and tissues not suitable for transplants can be very useful for the purposes of research. For example, in heart transplant operations the organ is removed while still beating as death in these cases is only cerebral. The organ taken from an already dead patient cannot be utilized for transplantation but could still be used for research purposes. Similar considerations can also be applied as far as the material discarded from surgical operations is concerned (e.g. staminal cells derived from adipose tissue) where the implementation could permit a greater availability of human tissue and/or organs.

In the strategic research aimed at safeguarding the health of humans, *post mortem* investigation can assume a significant role in a large number of circumstances. It is a frequent occurrence for patients to die of metastasis before it is possible to ascertain the site of the original tumor. Being aware of the cause of death of one's own parents and/or of grandparents is important for the offspring, and for the relatives in general, as the origin of diseases, beyond the undeniable effect of the environment, is also influenced by general predisposition and family history.

Patients who have undergone bone marrow transplants from healthy donors, from time to time unfortunately die as the result of devastating inflammatory phenomena which cannot be controlled. The cause might be an infection (for example as a consequence of Aspergillus, a fungus or a type of Ascomycetes), or in other cases death might be a result of Graft-Versus-Host-Disease (GVHD: when the transplanted organ 'rejects' the body in which it was implanted). While patients are buried or cremated without the cause of death ever having been discovered it would be sufficient to carry out an autopsy. From studies carried out on the brain of patients who died and had been suffering from Multiple Sclerosis (MS),

it emerged, for example, that there were traces of a specific virus (the most important seems to be the Epstein-Barr Virus, EBV) found in their Central Nervous Systems. The consequent activation of specific immune cells could have resolved the problem from the main site of the disease to enable discovery of the cause, or at least the factors which were responsible for triggering it, which continue to remain unknown. Furthermore, multiple sclerosis is an exclusively human disease as animals are never taken ill spontaneously, but rather it occurs as a result of a series of complex artificial maneuvers. In the study of animal models, experimental allergic encephalitis (EAE) therefore results, the researchers themselves have observed, in producing disappointing and even misleading results (Sriram and Steiner 2005, 939).

In fact, many potentially therapeutic molecules in animals function, while allowing the animal used for experimentation to regain lost mobility, prove either to be free from side effects or to provoke acceptable undesirable results. Nevertheless, very few of the drugs tested in vivo are effective in human beings. The consequences of the side effects continue to gravely manifest to the extent of provoking death in patients (such as in the cases of Fingolimod, or Natalizumab). The relevance of testing on human organs and tissues *post mortem* has been verified by studies conducted at The Imperial College of London, where a bank of human organs and tissues was used by a group of researchers from the Institute of Superior Health, in 2007. They analyzed 22 conserved samples of cerebral material and the results proved the existence of a relationship between the presence of EBV and the typical inflammatory reaction of the cerebral lesions present in multiple sclerosis (Magliozzi et al. 2007, 1089; Serafini et al. 2007, 2899).

Further studies more recently coordinated by researchers at the Queen Mary University of London confirmed a connection between EBV and MS. According to this research, the EBV virus is involved in the triggering of the neurological disease by means of mechanisms which had not hitherto been demonstrated but only hypothesized. The *post mortem* brains of patients suffering from muscular sclerosis was studied, concentrating on the areas of the brain which had been the most recent to be subjected to damage. It was discovered that the EBV seemed to have infected the immune cells, prompting an inflammatory process which provoked typical neurological damage. A technique that reveals the presence of brain virus in some people suffering from MS, even when the virus is found inside the cells, was utilized for this study. Although EBV is not active, chemical signals are sent through ribonucleic acid (RNA) molecules which activate the immune system causing inflammation and damage to the nervous system and the

onset of typical symptoms of MS. The results of this study are potentially very interesting. The way in which EBV is transported to the brain from the immune system has been clarified and also the location of the virus at the onset of damage to the nervous system has been demonstrated. For this research, which also aims to identify the cause, brain tissue was obtained from The Thomas Willis Oxford Brain Collection in Oxford (England), with the informed consent and support of the Ethics Committee (Tzartos et al. 2012, 15).

Such evidence emphasizes and provides proof, as highlighted by many researchers and bioethicists, of the opportunity to promote the *post mortem* donation of human bodies in a similar way to organ donation. In fact, if the explanted organs can contribute to saving or immediately rendering a life more bearable, the donation of corpses and organs for the purposes of research could make a useful contribution towards expanding the vision of scientific notions, with relative benefits in all fields.

On the other hand, ever since organ donation and the cremation of bodies have become morally acceptable, the procedure of being 'buried whole' has progressively and notably reduced. Indeed, currently people are more open to the idea of being 'useful to someone' after death. These developments therefore make it necessary to promote a new awareness towards the importance of the donation of one's own body as an expression of human solidarity with regard both to mankind but moreover towards all living beings. Donating one's body to research can contribute to the acquisition of valuable information with regard to human health, but would also significantly reduce the sacrifice of other living beings.

The attached document [1] (see *fig. 1*) is intended as a guide in order to offer further information regarding this initiative, in such a way that, while still alive, potential candidates are in a position to choose the most appropriate way of body donation, in accordance with their personal wishes. We strive to make as many people as possible aware of this proposal and naturally institutions, authorities, hospitals and universities can help spread the information regarding this opportunity.

[1] The document was originally written by Susanna Penco and Massimo Terrile, in charge of the Movimento Antispecista.

PROTOCOL FOR BODY DONATION

I the undersigned

Name and surname:
Place of birth:
Date of birth:
Residence:
Identity document (type: e.g. Identity card):
Identity document number:
Place and date of issue:

In the capacity of donor, I hereby declare the following:
After ascertaining the subject as dead by carrying out an ECG and having taken samples of the organs to be transplanted, I leave my body to _____ (*specify the name of the institution to which the body is being donated supplying the relative address*) so that it may be useful to science for whatever clinical and/or scientific experimental activity which from now on will be defined as 'Research'.
The donation of the body *post mortem* is exclusively motivated by ethical principles of human solidarity towards both humans and nonhuman animals and is therefore entirely free of charge.
The research will be carried out in such a way as to assure the utmost respect for the body.
The results of the 'Research' attained will be inserted into a public epidemiological research data bank.
A certification concerning that my body has been used for the aforementioned purposes and a synthesis of the results obtained from the research will be handed in to the trustee representative indicated at the bottom of this document.
Once the procedure is completed in compliance with the terms stated below my body will be returned to the trustee (or family members) indicated by the undersigned.
Such disposition must not, however, prevent the funeral rights in the form which I have selected.

The 'Research' **I agree** ☐ _____ **I do not agree** ☐ _____ to visibly disfigure my body (mark selected option with an X):
My body **will be** ☐ returned to my family in a dignified condition at the end of the 'Research', within a maximum period of _____ months for the funeral rights;
My body **will not be** returned ☐ and must be _____ (*indicate another option*)

For the implementation of the above the recipient hereby accepts the responsibility of all relative expenses including the transport and the burial of the remains/corpse and/or to require the possible intervention by mortuary officials where such expenses or a part thereof will assume responsibility if covered by local regulations. It will be left to the discretion of the heirs to take responsibility for such expenses or possible additional obligations, subject to notification of the same of the amount foreseen on behalf of the recipient.
In the case of the above-mentioned recipient neither having the faculties nor the possibility of carrying out the arrangements the trustee will have the full responsibility to elect another recipient (on the condition that the organization is as similar as possible to those previously established). In the case of difficulty, I authorize the same trustee to annul the hereby document. In the case of inability on behalf of the trustee to act as trustee, I request that such responsibility is assumed by one of my closest relatives, and if this is not possible or is rejected, I request the annulment of this document.
The hereby document does not in any way modify the biological testament drawn up by the undersigned.
The above mentioned regulations can be revoked or modified by the undersigned at any moment with a written declaration to this effect, or verbally in the presence of a witness.

I nominate the trustee who must ensure the correct execution of the arrangements Mr./ Mrs./Miss:

Born in on Resident in:
Address: Telephone:
Identity document type (e.g. Identity card):
Identity document number:

Acceptance of the trustee

Signature: _____

Acceptance of the legal representative from the recipient institute or other structure

Name of the structure/institution:
Date:
Name and surname of the legal representative:

Signature: _____

The donor

Place:
Date:

Signature: _____

Note (optional)
The hereby document was registered at:
(indicate the details and telephone numbers of others, not the trustee, or professionals such as a solicitor, lawyer, institution or association, etc., where a copy of the hereby document was registered).

Figure 1. – Proposal of a procedure for body donation.

5. Conclusion

In revealing the necessity to promote AM, also through the donation of one's own body *post mortem*, it is clearly evident that a culture strongly attached to the centrality of the ego, together with the lack of information/education about these issues, represents a considerable obstacle in accepting that one's own body could become a valuable biomaterial to be 'used' by medical science.

The possibility of promoting this important gesture of human solidarity is directed toward both humans and nonhuman animals and therefore cannot overlook the accepted preconceptions of our mortality which allow us to face the moment of death peacefully. It is therefore important to comprehend that our intrinsic self-respect and the respect for our nearest and dearest is not offended by any of the contents, which on the contrary seek to express love and solidarity towards the living.

In the investigation of new ways to implement AM we cannot exclude the fact that the level of awareness in the constructed cultural, social and economic values are based on the idea of an apodictic legitimacy/inevitability of the exploitation of nonhumans. The conscience of an appropriate morality and legal stance towards nonhuman animals is consequently a long, arduous, and inevitably gradual journey.

In recognizing the difficulties, particularly those of a cultural nature, of applying reasons of justice based on inter-specific equality, we nevertheless remain convinced that in order to make effective headway as far as animal protection is concerned, various differentiated measures are necessary in order to ensure a realistic grasp of the areas of conflict involved (AE) and a careful consideration of all the values at stake.

Another potentially fruitful initiative would be to offer the opportunity to a group of representatives with various outlooks from society at large to enter structures where decisions are made. In other words by seriously taking into consideration the positions regarding the prevailing interests and moral motivations it would be possible, in our view, to guarantee an evaluation of the interests in question.

From this perspective we consider that an effective contribution could be represented by the work of the ethics committees. These institutions which are obligatory in Italy deal solely with experimentation involving human beings, but could effectively enrich any reflections on the ethics of human responsibility towards animals used for research purposes.

The workability of setting up a public place in which discussion concerning problems of ethics associated with animal experimentation can be confronted from a pluralistic and interdisciplinary perspective would, in

fact, represent, a tangible/concrete sign of a democratic society capable of operating beyond the mere polarization of interests.

In order to meet the expectations of public opinion, the European Commission has advanced the proposal to set up a permanent independent authority of ethical evaluation in all structures used both for animal breeding and for hosting animals used for experiments. This authority would be in charge of promoting in-house debates on ethics, and stimulating a favorable climate for care in order to suggest new methods for a rapid and practical application of the most recent technical and scientific developments inherent in the 3Rs principles.

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