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Angelos Mavropoulos

Christian Orthodox Ethics' Viewpoint on Laboratory Animals

Abstract

'Laboratory animals' are non-human living beings, which are used by science for experimental or observational purposes. Several important contemporary scientific achievements, particularly in the field of biomedicine, have been accomplished thanks to animal experimentation; thence, more and more animals have nowadays been used in scientific research. Nevertheless, the issue of laboratory animals raises ethical concerns and has been the cause of many disagreements and controversy. These disagreements have been intensified since World War II and more so following the expressed theories of ethicist Peter Singer (1975), who has

Angelos Mavropoulos, Master of Christian Ethics, PhD candidate, Thessaloniki, Greece

been the main representative of the animal rights movement. After 1990, the emergence of genetic engineering has intensified the dispute even further. What is, however, the viewpoint of Christian Orthodox Ethics towards animal experimentation? Are acts such as captivity, inflicting pain or even putting down living creatures, for the sake of scientific progress, morally justified according to the ethics of the Orthodox theological tradition?

Keywords
Laboratory Animals, Animal Experimentation, Christian Ethics, Bioethics, Orthodoxy

1 Introduction

In 500 BC Alkmaion Krotoniatis, an ancient Greek doctor and physician, cut off an animal's optic nerve in order to observe its blindness. This is the first case of animal use for scientific purposes in history. Since then, animals have been increasingly used in scientific research, not only in the field of medicine and pharmacy but in a much wider range, even by the cosmetics industry. The so-called 'laboratory animals' have become a valuable tool and a symbol of scientific progress in modern civilization[1].

As 'laboratory animal' we define a non-human member of the animal kingdom, which is kept in captivity for experimental or

[1] James C. Whorton, 'Animal Research', in Warren Thomas Reich (ed), *Encyclopedia of Bioethics-Volume 1* (New York: Macmillan, 1995), pp. 143-145.

observational purposes[2]. Until the 19th century these animals' anatomy and mechanisms were being examined as a model in order to gain knowledge about the human body and physiology. The emergence of microbiology, the development of immunobiology and the discovery of hormones and vitamins have now transformed laboratory animals into an actual living workshop, equivalent to the classical laboratory. It is no longer a model, but an organism whose reactions are studied after deliberately subjecting it to scientific experiments[3]. The science dealing with the management of laboratory animals is called 'Laboratory Animal Science' and nowadays in some countries, it is an official scientific field of veterinary medicine[4].

Laboratory animals are divided into two major categories: vertebrates, i.e. those with a spinal column (and jaw), such as mouses, rats, guinea pigs, monkeys, etc. and invertebrates, which are those without a spine, such as octopuses and worms. The choice of a suitable animal for each experimentation depends on whether its characteristics resemble those of humans. Nevertheless, although it is well-known that medium-sized mammals share many similarities with humans, their use is limited, since their purchase, feeding, housing and care are much more costly than those of small mammals, which are therefore preferred[5].

Most biomedical achievements have been accomplished due to studies and experiments on animals. These studies have con-

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2 E. Diane Williamson, 'Defining Laboratory Animals', in Trevor Poole (ed), *The UFAW Handbook on the Care and Management of Laboratory Animals* (Oxford: Wiley-Blackwell, 1999), p. 7.

3 Thomas Ploumis, *Laboratory Animals-Facts* (Thessaloniki: University Studio Press, 2004), p. 11.

4 Stavros T. Tselepidis, *Introduction on Laboratory Animals* (Athens: Kyriakidis, 2009), p. 13.

5 Thomas Ploumis, *Laboratory Animals*, p. 12.

tributed to lowering the mortality rates of many diseases and to the general improvement of our quality of life. In addition, the tremendous progress in vaccines, antibiotics, and healing medications, as well as advances in surgical and other medical procedures have been achieved after testing their efficacy and safety on laboratory animals[6].

The most important findings in the history of experimental animal use can be found in the 20th century; we can mention some indicative examples, such as Pavlov, who performed experiments on dogs contributing to the discovery of dependent reflexes for which he received the Nobel of Physiology in 1904. In 1983, Salk and Sabin invented the poliomyelitis vaccine after experiments on monkeys, while Frederick and MacLeod experimented on dogs to identify the production of insulin, a discovery that completely changed the perspectives of diabetes treatment. Finally, the well-known case of successful sheep cloning in 1996, which led to the birth of Dolly, the first cloned organism from a single parent-cell, is worth mentioning[7].

In some cases, some governments have provided official information on the number of animal experiments that have taken place in their countries. Thus, in Great Britain in 1980, the animals used were estimated from 3.5 to 5 million, while in Japan in 1988 the estimation was 8 million. In USA in 1986, the Office of Environmental Technology of the Congress evaluated the figure to 'at least 17 to 22 million'[8].

The main research areas of medicine in which animals are used as experiments are: a) basic biomedical research, which simply observes biological phenomena and animal reactions, b) applied biomedical research, in which animals with artificial

6 Stavros T. Tselepidis, *Introduction*, p. 13.
7 Ibid., p. 15.
8 James C. Whorton, 'Animal Research', p. 148.

pathological symptoms are used, c) drug testing, in which new medicines are tested on animals, before they are marketed for human use and d) for educational purposes, especially in veterinary schools. These categories can be divided into several smaller subcategories[9].

Regarding to legislation, the first country to introduce animal testing laws, in an attempt to protect animals, was Great Britain in 1876. In Europe in 1985, the 26 member-countries of Council of Europe, after many years of discourse, finally agreed on the content of the 'European Convention for the Protection of Vertebrate Animals used for Experimental and other Scientific Purposes', while in 1986 this agreement was adopted by the Council of Ministers of the then European Economic Community. All members of the European Union are since then obligated to implement directives, through their national legislation, concerning the practices and ethical issues regarding animal experimentation. The most important principles of these European directives are: a) it is imperative that the welfare and health status of the animals are supervised by a competent person, b) animal experiments must be practiced only by persons who have been trained in animal experimentation, c) the experimental use of animals is prohibited in cases it is not absolutely necessary and d) all experiments must be carried out in a way that they cause the least possible pain[10].

In 1986 the United States adopted a decree which promoted the use of as few animals as possible, the search for alternatives when feasible, the avoidance of pain with the use of anesthesia, the provision of care and medical treatment and the painless

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9 Roman Kolar, 'Animal Experimentation', in Council of Europe Publishing (ed), *Ethical Eye-Animal Welfare* (Strasbourg: Council of Europe Publishing, 2006), pp. 67-68.

10 Stavros T. Tselepidis, *Introduction*, pp. 223-226.

termination of a suffering animal after the experiment's conclusion, if it has suffered irreparable damage[11]. Lastly, in Sweden in 1995 the Swedish Scientific Academy revised the country's animal welfare law and introduced a new one, according to which any experiment that causes suffering and pain to the animal should be avoided and if there is no alternative way of experimentation, the attempt of acquiring knowledge must be abandoned[12]. This has been the first case that relevant legislation refers to the abandonment of experimentation and supports that animal protection is superior to the potential acquisition of scientific knowledge.

All these laws are based on the doctrine of the 'three R' (3Rs), formulated in 1954 by researchers Russell and Burch, according to which Replacement, Reduction, and Refinement should always be applied. The first one refers to the substitution of animal experimentations by alternative methods that could lead to the same results, while reduction refers to the decrease of the number of animals used for each experiment. Finally, refinement contributes to the wellbeing of the laboratory animal and the avoidance of painful experimental procedures[13].

Much has been said so far about alternative methods of experimentation. The definition of these methods, according to FRAME (Fund for the Replacement of Animals in Medical Experiments), is as follows: 'alternative are all the methods that are able to provide the same information as conventional ones, but without using animals (replacing) or using a smaller number of experimental animals (reduction) and minimizing their suffering or pain (refinement)'. Such methods could be In vitro tech-

11 Baruch A. Brody, 'Defending Animal Research: An International Perspective', in Susan J. Armstrong and Richard G. Botzler (eds), *The Animal Ethics Reader* (New York: Routledge, 2006), pp. 264-265.

12 Roman Kolar, 'Animal Experimentation', p. 77.

13 Stavros T. Tselepidis, *Introduction*, pp. 164-165.

niques, the use of three-dimensional imaging computers, the use of mathematical models, or even the use of humans as experimental models; the latter, of course, raises massive moral concerns, but nowadays experimental studies on humans are made after experimentation on animals, in order for potential risks to be minimized[14].

A remarkable example of an alternative method is the case of German professor N. P. Luepke, whose research findings saved approximately 100,000 rabbits. Until then, clinical trials on the effect of new drugs required their spraying on the eyes of the rabbits, causing them blindness or even death. Luepke discovered that these experiments can also be performed equally well on chicken eggs that have been incubated for ten days, a breakthrough that led him to win the Research Prize for Restraining and Restoring Experimental Animals[15].

As we have already mentioned, any researcher who deals with animal experiments has the obligation to try to minimize or completely eliminate the animal's pain, not just for moral reasons, but also because pain could cause distortions to the results of the research. However, identifying pain on animals is not an easy task, since their communication with humans is impossible and also because animals react to pain completely differently than humans do. Animal pain is often accompanied by passive attitude, silence, and stillness; thus, recognizing pain is a difficult process. In terms of pain alleviation, there are plenty of analgesic methods, such as analgesic drugs, local anesthetics, antidepressant pills and acupuncture[16].

In addition, the case of euthanasia is also worth mentioning. Animal euthanasia is the putting down of a laboratory animal,

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14 Thomas Ploumis, *Laboratory Animals*, pp. 25-26.
15 Ibid., p. 19.
16 Stavros T. Tselepidis, *Introduction*, pp. 193-200.

after the completion of its research purposes, if it's suffering from an incurable disease, it is old or it is destined to die due to health reasons. The euthanasia administrator must be highly experienced so he does not cause any pain or fear and the best way of euthanasia is the administration of a high dose of anesthetic medicine. Euthanasia on experimental animals should not be performed brutally and must take place away from other animals, so they will not get emotionally affected. After the application of euthanasia, it is mandatory for the animal to be examined for its death attestation[17].

With the emergence of genetic engineering after 1990, there was a massive increase in the number of experimental animals, a figure that since then has been significantly reduced due to the legislation cited above. For this reason, there has been a pronounced increase in the number of discussions and disagreements on the subject of animal experimentation[18].

2 The moral concern

It is well known that human participation in scientific experiments is considered as absolutely legitimate and moral if the participants have been fully informed and have given their consent beforehand. The case of animals is, of course, different, since they cannot consent, so their use is widely considered to be circumventing their freedom and violating their rights.

The animal rights issue has led to many debates and conflicts over time, as a result of the publication of the book 'Animal Liberation' by Peter Singer in 1976. Since then, there has been a

17 Thomas Ploumis, *Laboratory Animals*, pp. 64-66.
18 Roman Kolar, 'Animal Experimentation', p. 65.

growing empowerment of the animal rights movement, with over 600 relevant organizations being established[19]. The largest among them is the People for the Ethical Treatment of Animals (PETA), founded in 1980, which consists of over 6 million members worldwide and manages a budget of approximately 13.4 million dollars. The main motto of the organization is that 'animals are not ours to experiment on, eat, wear, use for entertainment or abuse in any other way' and its main purpose is 'the protection of animals from exploitation and violence and the motivation for people to reassess their relationship with other species'[20].

Peter Singer, professor of Bioethics at Princeton University, is considered as one of the main figureheads amongst animal rights supporters. In his book, 'Animal Liberation', after citing typical examples of cruelty to animals for scientific purposes, he states that animals have rights themselves. In addition, he contradicts the argument of animals lacking common sense and autonomy, by mentioning that it would be exactly the same if painful experiments would be conducted on a person with severe brain damage, who also lacks these features. He also labels scientists and supporters of animal experiments as racists and draws a parallel between them and German Nazis, whose experiments were carried out on other races also on the basis of potential acquisition of knowledge[21]. Furthermore, he refers to dignity, asking why all people, including newborns, mentally disabled people and psychopathic criminals are considered to

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19 Charles W. Peek, Nancy J. Bell, Charlotte C. Dunham, 'Gender, Gender Ideology, and Animal Rights Advocacy', *Gender and Society*, 10.4 (1996), p. 464.

20 Marie Mika, 'Framing the Issue: Religion, Secular Ethics and the Case of Animal Rights Mobilization', *Social Forces*, 85.2 (2006), p. 916.

21 Peter Singer, *Animal Liberation* (trans. S. Karageorgakis; Thessaloniki: Antigoni, 2010), pp. 160-161.

have some kind of dignity that no elephant or chimpanzee could ever have[22].

Singer is also an adherent of utilitarianism, which is a term first introduced by Jeremy Bentham and further expanded by John Stuart Mill. The main idea of utilitarianism is that in order to decide if an act is ethically acceptable, we must summarize the benefits that will come from it and compare them with the damage it will cause; if the outcome is positive, the act is morally acceptable[23]. Thus, Singer states that if it was indeed possible to save many lives with an experiment that would only kill one life and there was no other way for them to be saved, then the experiment was justified. However, according to Singer, we now are at a point where pain is caused on millions of animals for reasons that cannot justify it[24]. These viewpoints have raised many questions about animal experimentation and the behavior towards animals in general; questions like whether it is worth killing so many animals or if it is moral for so many living creatures to be killed for science's sake and whether biological health and longevity are the most important values of life[25].

The main argument, however, between animal experiment supporters and abolitionists is whether animals are entitled to the same moral respect as humans. Discussions on this issue began in the 17th century, long before Singer's theories emerged. French philosopher Rene Descartes expressed the view that animals are impassible. Later on, with the emergence of scientific theories claiming that animals indeed feel pain, Bentham

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22 Ibidem, p. 369.

23 Strachan Donnelley, Kathleen Nolan, 'Special Supplement: Animals, Science and Ethics', *The Hastings Center* Report, 20.3 (1990), p. 4.

24 Peter Singer, *Animal Liberation*, p. 164.

25 P. Michael Conn, James V. Parker, *The Animal Research War* (New York: Palgrave Macmillan, 2008), p. 41.

stated that their ability to suffer provides them with the right to be treated morally. Samuel Johnson not only believed that no benefits from animal experimentation have arisen, but he also stated that even if there were benefits, they wouldn't be worth it in the face of torturing so many innocent creatures[26]. Immanuel Kant, on the other hand, supported the view that animals cannot be viewed as purposes, like humans, but only as a means to an end and that only human beings can be considered as persons and carriers of dignity. By emphasizing on autonomy Kant provided an indirect response to Singer who, as we have seen, questioned many people's dignity. Finally, similarly to Singer's viewpoint, the concept of Biocentrism suggests the recognition of dignity for all other non-human beings[27].

And while discussions on the matter had been continuing for about three centuries, in 1930 a scientific breakthrough finally justified the experiments regarding the expected benefits and made animal experimentation abolitionists rethink. After experiments on animals, the antidote of diphtheria, a disease that until then had caused death to thousands of children, would be invented[28]. A few years later, as we have seen, the discussions and the disagreements would be revived due to the increase in the number of experimental animals during World War II and also because of Peter Singer's theories. The debate continues until today, following the recent emergence of genetic engineering.

Supporters of the use of experimental animals claim that this is the only way of acquiring good knowledge of the human anat-

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26 James C. Whorton, 'Animal Research', p. 145.

27 Miltiadis Vantsos, 'Human Dignity: Concept, Content, and Assessment from the View of Christian Ethics', in Department of Pastoral and Social Theology (ed), *Theological School's Scientific Yearbook-Volume 10* (Thessaloniki: Aristotle University of Thessaloniki, 2005), pp. 198-200.

28 James C. Whorton, 'Animal Research', p. 147.

omy and physiology and that this kind of experimentation is the only one that can provide people the hope of finding a cure for incurable diseases, such as AIDS and cancer. They also believe that the benefits are not limited to humans, but are extended to the animals as well since many of the experiments are being used for veterinary purposes[29]. On the other hand, philosopher Tom Regan, following Singer, defends animal rights and underlines that any use of animals for research purposes is immoral[30]. Finally, philosopher Stephen Clark associates animals with war and states that in both cases murder is censurable and could be justified only if it is inevitable and the last viable solution[31].

Despite all these disagreements, ethicist David DeGrazia specifies some points, which the two sides could agree on without having to differentiate their core positions. These points are: a) the use of animals in scientific research raises ethical concerns, b) laboratory animals should be entitled to moral protection, c) many animals can feel biological and psychological pain, d) the welfare of such animals must be protected, e) animals with advanced sociability, such as monkeys and wolves, must have direct access to other members of their species, f) some animals whose species is at risk of extinction are entitled to even greater protection, g) alternative methods should be always used when feasible, h) improving human health is extremely valuable, i) there are some significant moral differences between animals and humans and j) some studies on animals are justi-

29 Ibidem, pp. 146-148.
30 Donnelley, Nolan, 'Special Supplement', p. 6.
31 Celia E. Deane-Drummond, *The Ethics of Nature* (Oxford: Wiley-Blackwell, 2004), p. 114.

fied[32]. On the basis of these points, some actions are proposed which could contribute to the resolution of the dispute: a) both sides must realize that the ethical issues arising from animal experimentation are complex and should stop the two-way propaganda, b) the more 'passionate' animal rights supporters must stop trying to intimidate people who disagree with them, c) scientists must realize that animals can suffer and re-examine some of their methods, d) the animal protection community must recognize the efforts made by scientists to reduce the inflicted pain or improve the animals' condition, e) both sides should attend ethics courses and conferences, and try to broaden their way of thinking, f) experimentation abolitionists must admit that some clinical studies are justified, g) ethical committees must hire more members of the animal protection community, h) the facilities which animals are kept in should be improved, i) both sides should help in order to find ways of reducing pain and suffering on animals and j) governments should provide extra funds for the discovery of alternative experimentation methods[33].

Finally, there are some ethical questions which the scientists have to answer themselves whenever they are about to perform an animal experiment. The first and foremost one is simply the reasoning behind it and if the potential scientific benefit outweighs the animal's suffering, justifying such an act. The second question is whether the procedure is going to cause pain or any other form of discomfort to the animal, raising serious moral issues. The next question to be answered is whether there are alternatives that could be used instead. Another answer that

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32 David DeGrazia, 'The Ethics of Animal Research', in Susan J. Armstrong and Richard G. Botzler (eds), *The Animal Ethics Reader* (Oxford: Routledge, 2003), pp. 255-257.

33 Ibidem, pp. 259-260.

needs to be given is if it is feasible for fewer animals to be used (reduction). The final question is whether it is possible for the scientist to modify the experimental method, in a way that it will not cause any pain or at least minimize it[34].

3 Laboratory Animals and Christian Orthodox Ethics

The Orthodox Theology's stance on the issue of laboratory animals must be understood in relation to its stance on man's behavior towards animals and towards Creation as a whole. Thus, the subject we are dealing with is directly related to ecology and the ecological crisis, that the human species has caused and to the Orthodox Theology's viewpoint on these issues.

Historian Lynn White Jr., in his article 'The Historical Roots of Our Ecological Crisis', criticized Christianity and blamed it for the emergence of the ecological crisis. White's theory was based on the Christian Theology's anthropocentrism, the dominance that God provided man with, which led to the improvident exploitation of the rest of the Creation, by man for his behalf[35]. A few years later, researcher John Passmore, adopting White's theories, brands man as a despot, one who considers himself superior to nature, oppresses it and wants to use it capriciously. Passmore, in his interpretation of the Old Testament, observes that God gave man His permission to treat the whole world as

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[34] Sarah Wolfensohn, Maggie Lloyd, *Handbook of Laboratory Animal, Management and Welfare* (Oxford: Wiley-Blackwell, 1998), p. 17.

[35] Lynn White Jr., 'The Historical Roots of Our Ecologic Crisis', *Science, New Series*, 155.3767 (1967), pp. 1206-1207.

he pleases and subjugates it violently, causing fear in other species[36].

However, it is not the teachings of Christianity that led to the ecological crisis, but man's misinterpretations of them. Man has mistaken and misconstrued God's command, he has utilized an 'expansive ideology' and turned his power into destructiveness. God has never given him this right. On the contrary, He taught him that he must have limits concerning his expansion. What in fact we are dealing with here is a sin on behalf of a misguided Christianity, which has led us to the present situation[37]. It is not a coincidence, as Orthodox ethicist George Mantzaridis states, that 'this crisis derives from Western Europe and North America, where Christian people live'. Thus, whereas at the start of the 20th century western Christianity led to the emergence of capitalism, during the second half of the same century, western Christianity once again was responsible for the evolution of the ecological crisis[38].

According to Mantzaridis, the main reasons for the emergence of the ecological crisis are: a) Creation's separateness from the Creator, which forced man to stop looking for God's presence in the world, b) the teaching of man's dominance over the rest of Creation, which gives him the right to conquer the world and to dominate all other beings and c) the Judeo-Christian tradition's linear view of time concept, for which time is comprehended as a rectilinear movement with a beginning and an end. All of these, for Mantzaridis, are in fact secularized paraphrases and

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36 A. Mpotas, I. Kalyvas, I. Anyfantis, *The Orthodox Perception of the Ecological Crisis* (Karditsa: Publ. of the Holy Metropolis of Thessaliotis and Phanariers, 2006), p. 51.

37 Apostolos B. Nikolaidis, *Christian Ethics Concerns* (Athens: Grigoris, 2002), p. 161.

38 Georgios I. Mantzaridis, *Christian Ethics I: Introduction, Basic Principles, Modern Concerns* (Thessaloniki: Pournaras, 2008), pp. 223-224.

misinterpretations of the Christian Theology and not its actual teaching. Christianity, apart from the secularization of the world, that is the separation between the Creator and Creation, has taught the secularization of God, i.e. His presence in the world. Moreover, the recognition of man's primacy within Creation does not justify his arbitrary and abusive treatment of it. Finally, regarding time's linear movement, it is transformed in the Church, in which a new form of time is created, the so called 'connective' one, because it connects the linear motion with eternity[39].

The misinterpreted passages of Christian teachings derive from the book of Genesis. The first one is the creation of man, who is created in the 'Image' and 'Likeness' of God, as opposed to the rest of the living beings, to which these characteristics are not given (Gen. 1:26-27). The second is God's command to man to rule over all other beings, 'the fish in the sea and the birds in the sky, over the livestock and all the wild animals and over all the creatures that move along the ground (Gen. 1:26-28). Another point is the fact that all animals are named by Adam, which reveals his dominion over the animal kingdom (Gen. 2:19-20). Thus, because of the misinterpretations of these passages, man's abuse of his sovereign power has taken place, which led to the disruption of his relation with nature and the animals.

Man has not been created in confrontation with nature, but in harmony with it. Instead of using it at will, he should be trying to protect it and of course any destruction of flora and fauna cannot be considered as progress[40]. The fact that Creation is under man's authority, demonstrates his responsibility for its protection, since he should not just love himself but also Crea-

39 Ibidem, pp. 224-226.
40 Ibidem, p. 238.

tion as a whole and be at peace with it. Any being's life is valuable, due to its origin from God's creative work, a fact that man has to recognize. His attitude towards nature derives from his attitude towards God and his estrangement from Him, In the case of the ecological crisis, the sin committed is not only against Creation, but also against God who created it[41].

The science of Theology, and especially Christian Ethics, is necessary for the issue of the ecological crisis to be addressed, as it is able to reveal all these initial causes, deriving from man, who is located at the center of theological attention. Just as Creation followed Adam, the first man in his fall from heaven, it also follows the new man, Christ to redemption; this is why man's relationship with the rest of the Creation can only be restored through Christ. Besides, Lynn White himself, underlines at the end of his article that since the roots of the crisis are religious, the means of its healing should also be religious[42]. In the same context, Orthodox theologian Antonis Mazneikos stipulates that the causes of ecological crisis are not just economic and technological, but also deeply spiritual. Man tries to secure his destructive dominance over Creation, defying every moral barrier and alienating himself from God, reflecting his inner world[43].

We could say that those who adopted the theory that it was Christianity that led to the destruction of nature and all the Christians who misinterpreted the passages of Genesis, chose to overlook the passages that refer to man's protection of nature. Two characteristic examples are the following: a) the reference of man's placement in paradise in order for him to work in it and protect it (Gen. 2:15) and b) the incident of Noah, who upon

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41 Ibidem, p. 239.

42 Ibidem, pp. 247-258.

43 Antonios A. Mazneikos*, Orthodox Church's Views on the Protection and Sustainability of Natural Environment* (Athens: Myrmidones, 2013), pp. 92-94.

the command of God, protects the animal kingdom, by placing animals in his ark for the purpose of their salvation (Gen. 7:14-16). Besides the Genesis' reference, 'God saw all that he had made, and it was very good' (Gen. 1:31) pinpoints the great significance of Creation as a whole. The creation of the world shows evolutionary order, harmony, and extreme beauty and this is why it was named 'cosmos', which in ancient Greek means 'jewel'[44].

The fact that man was created last in relation to the rest of Creation reveals his dependence on it and this is something that all environmentalists acquiesce to; what they do not all accept is that the environment also depends on man and needs him, based on the fact that, historically and according to the Old Testament and the theory of evolution, all the other species existed long before man's presence. This is the point where Orthodox Theology differentiates itself, claiming that the essence of the Creation deepens because of the existence of man, who is the flagship of Creation. Thus, there is an interdependent, but also a dialectical relationship between man and the rest of Creation. St. John Chrysostom relates this relationship to the relationship between the king and his palace; God first builds the palace and then the man-king, whom He places inside[45].

Thus, man has to revise the way he treats and behaves towards the environment and the only way to make this happen is by following an 'ecological repentance'; this repentance should be accompanied by the following choices: a) respect nature, but not worship it, b) overcome his utilitarian and acquisitive relationship with the world, c) deal with progress in an ascetic way, following the so-called 'simple life', d) accept the theo-centric

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44 Christos K. Vantsos, *Church's Care for the Protection of the Environment* (Thessaloniki: w.p., 1997), p. 14.

45 Mpotas, Kalyvas, Anyfantis, '*The Orthodox Perception*', pp. 45-47.

predominance, by rejecting the anthropocentric one, e) properly understand the theory of world's anthropocentrism and f) recognize and respect the boundaries of his freedom[46].

As we have already mentioned, God placed man in the natural environment to work in it and protect it, so the relationship between man and the natural environment should be balanced between these two, namely the right to 'work' and the obligation of 'protect'. The proper use of Creation requires the simultaneous care for it and in the modern world this is translated as responsible use of technology and science, which man of course should not ignore. Scientific research and technological development are necessary, but only if they are carefully controlled by man, so they do not obstruct the world's ultimate purpose[47]. Holy Father Isaac Syros, states regarding the relationship between man and the natural environment: 'My heart is burning for all Creation, for humans, for birds and animals and for demons and for every creature'[48]. So as master of Creation, man should take care of all creatures and try to secure their protection.

The modern western world, faced with the anthropocentric perception of Creation, developed two 'antibodies'. The first is Darwinism, which emphasized that man is not the only living being with intellect and that consciousness can also be found in animals; the difference between animals and humans lies in the level of intellect?, rather than in the species themselves. Western Theology declined to seek the difference between man and

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46 Efthimios-bishop of Acheloos, *The Creation* (Athens: Tinos publications, 2002), pp. 162-167.

47 Anestis Keselopoulos, *Human and National Environment* (Athens: Domos publications, 1992), pp. 84-85.

48 Georgios I. Mantzaridis, *Christian Ethics II: Man and God, Man and Fellow Man, Existential and Bioethical Views and Perspectives* (Thessaloniki: Pournaras, 2009), pp. 572-573.

animals in other areas apart from cognitive thought and preferred either to engage with Darwinism, or to succumb to it, accepting its inferior anthropology. Darwinism is still in the forefront and Theology has to use it both positively and negatively, in order to address the ecological problem. The second antibody derives from the area of natural philosophy: Albert Einstein and quantum physics. The science of physics suggested the end of the division between essence and fact and introduced the theory that the whole universe is an inseparable unity and that man is not separate from the rest of Creation. The pressure exerted by physics to review the traditional Theology could be beneficial when it comes to dealing with the issue of the ecological crisis and the Church should adopt a combination of Christian tradition and new scientific advances for this endeavor[49].

Confining all of the above to the more specific case of animal testing and trying to showcase Orthodoxy's view of it, we will cite two relevant Orthodox patristic references. St. John Chrysostom expressed the view that all animals serve a purpose and that they all contribute to the purpose of achieving man's moral virtue[50]. On the other hand, Basil the Great mentions that even though each animal has its own characteristics, God's wisdom is manifested in all of them and that man could be taught valuable lessons from every animal[51]. Furthermore, it is worth mentioning that in Orthodox tradition there are many cases of therapeutic miracles performed on animals and also that Orthodox hymnology is full of prayers dedicated to them, such as the one by St. Mamas ('no disease or any other diabolical suffering on

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49 Ioannis D. Zizioulas, *Creation as an Eucharist: Theological Approach to the Problem of Ecology* (Athens: Akritas publications, 2011), pp. 56-59.

50 John Chrysostom, *Εις τους Ανδριάντας Ομιλίαι ΚΑ'*, PG 49, 130.

51 Basil the Great, *Ομιλία εις την Εξαήμερον*, PG 29, 192-201.

His (i.e. God's) herd, Amen')[52]. Hence, it becomes clear that the Orthodox Church and its tradition loves and protects animals and the rest of Creation.

Regarding the use of animals in scientific research in particular, the Orthodox Church does not accept unchecked animal abuse, but suggests that man should become aware of his obligations, stop believing that he has the right to destroy nature and embrace the fact that animals have moral value[53]. On the other hand, it is true that technological and scientific progress is of great importance and this is something that Orthodox Ethics have come to terms with. So, a balance between these two truths is required, which can put an end to the dilemma.

Orthodox ethicist Apostolos Nikolaidis states that Christian Ethics could be in a position to understand science's need of animal use, as both laboratory animals and a source of transplantation, if this is necessary and fully useful for man. On the other hand, what science should be aware of is that these practices must not only serve scientific purposes, but also respect the ethical principles of using living beings. These principles are: a) the respect of the animal's genetic identity, b) the avoidance of their misuse, c) the renunciation of the logic of ill-advised gains and d) the necessity of seeking and finding alternative methods. All of these are summed up in the aforementioned theory of the three Rs, with which Orthodox Ethics are in absolute agreement[54].

Finally, much has been said as far as dignity is concerned. As we have seen, the answer of Christian Ethics to Singer's and his

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52 Θεόδωρος Ι. Ψαριώτης, *Οικολογικό Συναξάρι*, Αθήνα, 2001, σ. 44.

53 Alexandre M. Stavropoulos, 'Orthodox Church', in Council of Europe (ed), *Ethical Eye-Animal Welfare* (Strasbourg: Council of Europe Publishing, 2007), pp. 159.

54 Apostolos Nikolaidis, *From Genesis to Genetics* (Athens: Grigoris, 2006), pp. 84-85.

adherents' view that an animal that shows signs of communication, emotion and intellect has the same or greater moral value than an embryo or a human with brain damage, is that animals could never be able to develop autonomy and logic because these characteristics belong to human nature, even if for whichever reason, a person cannot actively exercise them[55]. Therefore, there is a tangible difference between the nature of man and the nature of an animal, which however does not justify the latter's abuse by the former.

4 Conclusions

Laboratory animals are animals which are used by science for experimental or observational purposes. Several important scientific achievements, particularly in the field of bio-medicine, have been achieved after experimentation on animals and in recent years more and more of them have been used in scientific research.

Many laws that protect laboratory animals have been passed. All of these laws are in compliance with Russell's and Burch's theory of the three Rs (1954), according to which scientists should be trying to find alternative experimentational methods (Replacement), to reduce the number of animals used (Reduction) and to strive for the best quality of animal life and for the avoidance of the inflicted pain (Refinement).

Nevertheless, the issue of laboratory animals raises ethical concerns and has been the cause for much controversy. Although there have been discussions and disputes since the 17th centu-

55 Miltiadis C. Vantsos, *Ethical View of Abortion* (Thessaloniki: Sfakianaki Publishing, 2009) p. 63.

ry, these have intensified mainly after World War II and even more so, following the publication of Peter Singer's theories. After 1990, the emergence of genetic engineering has intensified the controversy even further.

Proponents of the use of laboratory animals claim that this is the only way for scientific knowledge to be acquired and that these practices benefit animals as well, since they also contribute to the veterinary science. On the other hand, animal experimentation adversaries are countering that animals have rights and dignity and that making so many innocent living beings suffer is unethical.

The viewpoint of Christian Orthodox Ethics on the subject is reflected in relation to its position on the ecological crisis and ecology in general. Man, alienated from God, has anointed himself as the Creation's dictator and exploits it inexorably, disregarding any moral principle. Lynn White expressed the opinion that Christianity is responsible, because it rendered man ruler of Creation; God's commandments towards man to rule the world, according to White and his supporters, have made man abusive and gave him the right to do as he pleases.

However, in reality, it is not the actual teachings of Christianity that have led to this, but their misinterpretation. The purpose of Christian Ethics is to reinstate man back to his natural condition. He must reconcile himself with the world he lives in and collaborate with it harmoniously. Besides that, in the Orthodox theological tradition there have been many references to loving and protecting of the animal kingdom and nature in general. The position of man as Creation's master, in which he was placed by God, does not give him the right to destroy it; in contrast, it obliges him to protect and care for it. The ecological crisis is, above all, a spiritual crisis with deep roots, which derives from the relationship of man with God and which affects man's relationship with the environment.

On the other hand, it is the Orthodox Ethics' firm position that the advancement and development of science is extremely important and must be preserved. Thus, man must find a happy medium between environmental protection and scientific development and a balance that will serve both sides; Christian Ethics can contribute the utmost towards this direction.

With regard to the use of animals for experimental purposes, experiments should be used in a way that not only serve scientific purposes, but moral values as well. These moral values encompass the respect of the animals' identity, the avoidance of maltreatment, the search for alternative experimentation methods and the decoupling of the experiments from the logic of the imprudent profit.

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