

# Ethical Considerations for Performing Research in Animals

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## 2.1 Introduction

In many industrialized countries it is a legal requirement that before an animal experiment can be approved, the human interests in the advancement of knowledge and the development of new drugs or therapies must be weighed up against the animal interests in freedom from pain and a species-appropriate life. This weighing of interests aims at a rational choice between the available options for the performance of the planned experiment. Deliberations of this kind are always *ex ante*: not only do the extent of harm and benefits have to be taken into account but also the probability of their occurrence. This is tantamount to comparing risks and benefits with the aim of choosing, on the basis of the comparison, a morally acceptable option.

Asking researchers to weigh up human interests against animal interests makes sense only on the basis of the assumption that animals have

some kind of moral status. If animals had no moral status there would be no need for taking them into account at all. Weighing the harms and benefits would simply be superfluous since animals would have no moral weight. What then is the moral status of nonhuman animals, especially in comparison with human beings? This will be the first question to be dealt with in this chapter (Section 2.2). It will be seen that the answer the majority of the population in Western countries would subscribe to is unsatisfactory. For this reason it is necessary to take a closer look at the answers given by the most prominent ethical theories. As will become apparent, there is no agreement among these theories regarding the moral status of animals. As a consequence, they also disagree with regard to the way animal testing should be ethically evaluated. Provided such testing is permitted how should it be performed? This is the next question we will turn to (Section 2.3). By means of three examples it will be discussed how ani-

mal interests can be weighed up against human interests and why the three-R principle is not the exclusive criterion for the ethical assessment of animal experiments.

## 2.2 The Moral Status of Animals

### 2.2.1 (Modern) Common Sense

According to our everyday beliefs (most) animals do have some moral value. However, between the human and animal there is a considerable, ultimately unbridgeable, moral gap: Humans have higher moral value than animals. Thus, assigning too much moral importance to animals is ethically questionable. Two examples may suffice to illustrate this point: (1) sacrificing animals and sacrificing humans are judged to be two completely different things; and (2) most people agree that animals, unlike human beings, may be caught, kept in captivity, and sold.

Regarding animal experimentation this implies that the suffering of humans carries more weight than the suffering of animals. This is why it is morally and legally required to test new therapies or drugs on animals before testing them on humans. If humans and animals had the same moral value this could not be justified. In that case testing drugs or therapies on animals or humans would have to be forbidden or it would be admissible to test them directly on humans.

The question then is whether human beings really have a higher moral standing than animals. Is this common sense belief justified? Given that our common sense beliefs, i.e., our pre-theoretical moral intuitions are the product of history, culture, and upbringing, and not a reflection of objective moral values, we can better assess their validity if we take a look at their origins. In Western culture they have two historical roots:

- *The Bible*. According to the Bible, man is made in the image of God. So to equate human beings to any other animal degrades humankind. God placed animals on earth for the ben-

efit of humankind; therefore humans have the right and obligation to use animals as needed. The main problem of this argument is that in secularized societies, religious beliefs cannot claim validity for all. They are ultimately nothing more than private creeds.

- *Natural right theory*. According to this theory which traces back to stoicism, a school of Greek philosophy founded in the third century BC, the ability to reason constitutes the fundamental moral difference between human beings and nonhuman animals. Unlike animals, humans are able to think and to reason. Therefore animals exist only for the benefit of humankind. The main problem of this argument is that it does not show why cognitive capacities – language-based reasoning and accountability – have a special ethical value, even if it was true that only human beings have them.

### 2.2.2 Speciesism

Neither the biblical nor the stoic justification of the special moral status of human beings is convincing. Therefore, many people opt for another approach called speciesism. According to this approach human beings have a special moral status, i.e., they are more valuable than members of nonhuman species, because they belong to the species *Homo sapiens*. Hence human and nonhuman beings may be treated differently because they are members of different species. However, speciesism cannot be warranted since there is no reason why a bare biologic divide – marked by reproductive isolation – should be morally relevant (Rachels, 2006a).

Thus far we have found no plausible justification for a morally relevant difference between human beings and nonhuman animals. Regarding animal experiments this means: The dominant ethical (and legal) position according to which animal testing is admissible in order to achieve scientific and medical goals provided that animal suffering and use is minimized is harder to warrant than its supporters believe. This position is usually based on some of the

arguments sketched above, which are deeply ingrained in our culture. However, if these arguments cannot withstand critical scrutiny they must be abandoned. This does not necessarily entail that the dominant ethical position cannot be warranted. Doing that requires more plausible arguments, though.

Such arguments may be found if we ask which features of individual beings are morally relevant irrespective of species (or race or sex). There are mainly three features that must be mentioned: Pain and suffering/pleasure (fulfillment of desires), autonomy, and dignity.

The basic idea of this approach is that individual beings who have some or all of these features count morally, regardless whether they are human beings or nonhuman animals (Rachels, 2006b). How much they count, however, is an open question (Gruen, 2003). Do they all deserve the same respect and the same degree of protection? Or are there justifiable differences? The four single most important systematic ethical theories answer this question differently. These theories are Kantianism (deontology), strong egalitarianism, utilitarianism (consequentialism), and contractualism (interest-based moral theory).

### 2.2.3 Kantianism (Deontology)

Kantianism is the most prominent case of a moral view called deontology. From a deontological point of view certain acts, such as the intentional killing of an innocent person, are morally wrong in themselves, i.e., irrespective of their consequences. Such acts are prohibited even if they would increase or maximize net benefit (Timmons, 2002).

On a Kantian approach the ethically decisive feature is autonomy: the ability to reason or, more accurately, the ability to set oneself goals based on reasons and, in doing so, to be guided by what is morally right (in Kantian parlance the categorical imperative). Only individual beings with this ability morally count for their own sake. And all beings with this feature count alike.

According to Kant autonomous beings have an absolute value. This is what he calls dignity. In this sense autonomy is coupled to dignity. Having dignity implies that autonomous beings must never be used as mere means to an end. With regard to experiments in general this means: No autonomous being may ever be used in any experiment without prior consent, not even if thousands of lives could be saved. This is the deontological aspect of Kantianism: There must be no trade-offs between autonomous beings – irrespective of the consequences. The main problems of this ethical theory are the following:

1. It must be able to show by means of rational argument, that is, without recourse to religious or metaphysical assumptions that autonomy has an absolute value. Whether this is possible appears highly doubtful.
2. According to Kantian hierarchism most animals are not autonomous because they do not have the ability to reason. This is why we have no direct moral duty to animals, we owe nothing to them (Gruen, 2003). Yet Kant himself clearly opposed wanton cruelty to animals, but mainly because “he who is cruel to animals becomes hard also in his dealings with men”. This, however, does not change the fact that animals – insofar as they lack autonomy – are “there merely as a means to an end. That end is man” (Kant, 1997).

Kantians thus claim that we have an indirect duty to animals. However, whether such a duty can be justified is questionable. Kant does not deny that animals can suffer. Nor does he deny that the suffering of animals may engender feelings of compassion. Nonetheless, cruelty to animals is not morally prohibited per se but only insofar as it may affect autonomy since autonomy is the only morally relevant feature. However, if we are aware of this there is no reason why we should not be able to differentiate clearly between cruelty to nonautonomous animals and cruelty to autonomous human beings. And if we have this ability there is no



reason why cruelty to animals should necessarily tend to turn into cruelty to human beings. If this is correct Kant's argument collapses. This would entail that animals may be used for any kind of experiment and that any kind of cruelty may be inflicted on them.

#### *Attitude Towards Animal Experimentation*

Because humans are the end and animals mere means, animal experiments that help or are likely to help maintain and foster autonomy or prerequisites of autonomy (like health) are morally justified. In other words: the interests of autonomous human beings – as far as they affect their autonomy – always outweigh the interests of nonautonomous animals.

### **2.2.4 Strong Egalitarianism (Animal Rights Movement)**

According to strong egalitarianism – mainly represented by the American philosopher Tom Regan (1983) – the decisive moral feature of an individual being is its inherent value. Beings with inherent value have moral rights or dignity.<sup>1</sup> They must therefore be respected. This means that we must never use them as mere means to some end. In this sense strong egalitarianism is a version of Kantianism: Dignity can

only be assigned to autonomous beings. What lies at the basis of dignity is the value of autonomy. Strong egalitarianism radically differs from Kant, however, with regard to the interpretation of dignity (inherent value) and autonomy. It claims that animals have dignity just like human beings. This implies according to its understanding of dignity that animals are just as autonomous as human beings.

If dignity is explained in terms of autonomy, autonomy usually refers to the ability to reason and to take decisions on the basis of reasons. Obviously most animals do not have this kind of autonomy. This is why strong egalitarians suggest interpreting autonomy in a different way. To them autonomy does not mean the ability to reason but the ability to have one's desires fulfilled, which implies the ability to form desires and beliefs as well as the ability to remember things and have a sense for things to come. Thus understood, at least most mammals are autonomous – or so strong egalitarians claim.

In the present context, this conception is problematic mainly for the following reason: Even if we accept the extension of dignity to animals it remains hard to see why we should accept that dignity is an incomparable or infinite value.<sup>2</sup> It may even be argued that the abil-

<sup>1</sup>According to Regan dignity means the same as inherent value.

<sup>2</sup>To do justice to Regan's account it must be added that this value is not absolute in the sense that trade-offs are absolutely prohibited. It is always wrong to treat an autonomous being merely as a means to the ends of others. This implies that it is invariably morally reprehensible to harm others in order to generate benefits for oneself or other autonomous beings, whatever these benefits may consist of. To give an example: We must not, ever, hurt any autonomous animal in an experiment even if this were the only way to develop a life-saving therapy for other autonomous beings. However, there are situations where, whatever we do, we violate the rights of others. In such situations trade-offs between autonomous beings become inevitable. We should then follow the "miniride principle" and override the rights of as few autonomous beings as possible, given each affected individual would be equally harmed. When the individuals involved would not be equally

harmed, the "worse-off principle" should be applied. This principle says that in situations where the right of several individuals not to be harmed will unavoidably be violated we should override the right of those individuals who would suffer less harm than the others. What this implies can be illustrated using lifeboat cases. Imagine a lifeboat with four humans and one dog vying for space. One being must go overboard as there is only room for four. Regan claims that the dog ought to go overboard. The reason for this is that death would cause a greater harm to each of the (normal healthy) humans than to the dog. Why? Because there are more possible sources of satisfaction in a normal human life than in the life of a dog. Note that this argument is based on a contentious view of the disvalue of death: the so-called deprivation view on which death is bad for the dead because it deprives them of the positive goods they would have experienced had they not died. This also makes clear that Regan does not fall back on a speciesist position: The dog should not be sacrificed because it is a non-human animal.

ity supposedly underlying this kind of dignity, i.e., the ability to be the subject of a life and to have one's desires fulfilled, has no particular moral value at all.

#### *Attitude Towards Animal Experimentation*

According to Kant the dignity of a person is only respected if his/her autonomy is treated as an incomparable value. This means that there must be no trade-offs with other values of any kind. Furthermore, since autonomy is an infinite value and this value is equal to dignity one cannot say that 10 persons have more dignity than one person. Strong egalitarianism claims that the same applies to animals as far as they are autonomous: Their value is infinite. Hence, one cannot say that one ape has less dignity than 1,000 apes or 1,000 human beings. In terms of weighing interests this means: No human interest can ever outweigh the interest of just one mammal not to be harmed. For this reason harming or sacrificing autonomous animals can never be justified. As a consequence, strong egalitarians are opposed to any kind of animal experimentation, provided that autonomous animals are affected.

#### **2.2.5 Utilitarianism (Consequentialism)**

Utilitarianism is the paradigm case of an ethical view named consequentialism. According to this view the rightness of an act solely depends on its (expected) consequences. Consequentialism requires choosing among those acts available, the act having the best consequences. From a utilitarian point of view this means that in each case the action must be chosen that presumably results in most happiness for all those being affected. Hence, there is just one moral duty: the duty to maximize happiness (Timmons, 2002). Happiness refers to the ability to feel pleasure and pain or, alternatively, to desire fulfillment. Only individual beings with this ability morally count. And all beings, with this ability, i.e., all sentient beings count alike (Singer, 1975).

Note that utilitarianism does not only differ from Kantianism with regard to the morally relevant feature. Rather, the structure of the theory is different. In utilitarianism there are no inherent values that allot dignity or moral rights to individual beings. Hence there are no rights that serve as constraints on utility considerations. Sentient beings – including human beings – are just receptacles of pleasure and pain. As such all of them have the same value: They all count as one and nobody for more than one (Bentham, 1781/1982). However, what actually matters is not their individuality or personhood but the pleasure or pain they are able to experience: They are mere units of utility. Morality requires maximizing this utility, i.e., the aggregate happiness of all beings affected by an action. The technical term for this is total utility or net benefit. Net benefit is defined as the total amount of pleasure (pleasant feelings) minus the total amount of pain (unpleasant feelings).

Utilitarianism is faced with a whole array of problems. In our context two need to be mentioned:

1. It is hard to see how the principle of maximization can be rationally justified. Why should everybody have a moral duty always to maximize the net benefit?
2. Weighing pleasures and pains and summing them up presupposes a common scale, a common currency, as it were, that allows adding and subtracting them. But what does this currency consist of?

#### *Attitude Towards Animal Experimentation*

Animal experiments are justified if they help to increase the expected net benefit (the well-being of all affected beings). Of course, this does not require predicting the results with certainty. Experiments are necessary exactly because we do not know the outcome for sure. Yet in many cases the accumulated scientific knowledge allows estimating the probability with which the hypothesis to be tested in the experiment may be corroborated and the hoped for goal(s) thus achieved.

The expected net benefit if the experiment were performed would consist of the following aspects: the probability of reaching the goal(s) of the experiment; the overall decrease of human pain (or increase of pleasure) to be expected if the goal(s) can be achieved; and the foreseeable (probable) pain or suffering inflicted on the animals used in the experiment. It is crucial to bear in mind that if the suffering of two individuals is alike it must be given the same weight irrespective of species, i.e., irrespective of whether it is a human being or a nonhuman animal (Singer, 1975). This explains why for utilitarians it is just as important to determine the severity of pain inflicted on the animals in an experiment as to determine the quantity of human pain that may be reduced due to the experiment.

### 2.2.6 Contractualism (Interest-based Moral Theory)

According to contractualism, morality is based on the self-interest of rational beings. It is better for each person that everyone should follow certain restrictions than that nobody (or few people) should follow these restrictions. To abide by moral rules is thus a question of prudence: Rational people, interested in their long-term well-being, voluntarily bind themselves to certain moral norms and are willing to enforce morality as a public good by sanctioning those who do not stick to these norms. They do so because the institution of morality – publicly accepted by all – fosters and safeguards their long-term individual welfare.

In the standard version of this theory it is prudent for every rational person to take all beings into consideration that are able to punish their noncompliance. It is also prudent to care for other human beings in need since each person may one day find him or herself in a situation where they need other people's help. From this it follows that certain moral rights such as the right to physical integrity or the right to assistance and the corresponding duties should be accepted. According to

this understanding of contractualism animals do not have moral standing because they cannot help or sanction us. They only matter indirectly, i.e., insofar as rational persons care for their well-being and strive to avoid their suffering. There is thus no duty to respect them for their own sake (Carruthers, 1992).

There is, however, an alternative version of contractualism according to which animals do have moral rights, justifying a duty to respect them for their own sake. Suppose, as all contractualists agree, that we have an interest not to be harmed as well as an interest to be protected when we lack power of judgment or when we are unable to act and need other people's help. This applies to old people just as much as to young children. If we base this approach on the hedonistic idea that it is in no one's interest to suffer, it would even apply to all sentient beings. This would entail that animals (at least vertebrates) also have moral rights, such as the right to physical integrity (Rippe, 2008).

From a rational point of view the main strengths of contractualism are that it is not based on ontologically queer entities such as objective values and that it does not implicitly presuppose any moral norms. Nevertheless, some aspects of contractualism are problematic. Why, for instance, should strong persons have any interest in accepting moral constraints if they do not have to fear sanctions? Furthermore, would it not be better for every rational person if all other persons abided by the rules except themselves? And if so why should they not act accordingly? Finally it may be objected that contractualism does not unequivocally answer the question about the moral status of animals: On the standard version animals have no moral rights, on the alternative version at least vertebrates have moral rights.

### *Attitude Towards Animal Experimentation*

Depending on the version, the attitude towards animal experimentation varies. The standard version takes a positive attitude as there are no

direct duties to animals but direct duties to other actual and potential persons, especially a duty to help them if they cannot help themselves. The alternative version takes a critical attitude. If vertebrates have a moral right to physical integrity this entails that animal experimentation can only be justified if the right of human beings to get help in specific emergency situations is so important as to outweigh this right.

Table 2-1 summarizes the four widely known ethical approaches to animal welfare.

## 2.3 Weighing Up Interests in Animal Experiments

The basic idea of weighing up human interests against animal interests is that an animal experiment is morally admissible if the expected net benefit for humans is greater than the suffering and distress the affected animals have to expect. This basic idea can also be formulated in deontological terms, namely as a conflict between the duty to help human beings and the duty not to inflict pain and suffering on animals. An animal experiment would be morally justified if the former outweighs the latter. Whether or not this is the case can only be decided on a case-by-case basis.

This idea is not the idea underlying the three-R principle – replacement, reduction, refinement – a concept introduced by Russell and Burch at the end of the 1950s – since this principle assumes a basic precedence of scientific knowledge and the duty to help human beings over animal protection interests (Russell and Burch, 1959). Accordingly there is no need to perform the weighing procedure. There is only a moral duty to reduce the suffering of the affected animals as much as possible. However, from the perspective of the three-R principle a scientifically relevant experiment may never be prohibited on the ground that it inflicts too much pain on the affected animals.

Regarding the ethical evaluation of specific animal experiments the normative moral theories outlined above may yield different results. Ultimately there is no way of rationally comparing human and animal interests, no method or procedure that is independent of these theories. At this point we have to be more specific, though. At least one of the theories, namely strong egalitarianism, always prohibits trade-offs between human and animal interests. This theory completely rejects any kind of weighing of interests since at least mammals are just as autonomous as (most) human beings and thus have dignity (absolute value). At the other end of the theoretical spectrum is utilitarianism. Utilitarianism demands allocating a weighing to the respective human and animal interests every time someone intends to conduct an animal experiment. Kantianism allows comparing human and animal interests as long as autonomy is not affected. If, however, an animal experiment helps to protect or promote autonomy it must be conducted, provided only non-autonomous animals are used, irrespective of the amount of pain that has to be inflicted on these animals. The standard version of contractualism takes a similar stance even though it does not focus exclusively on autonomy and its prerequisites. The alternative version of contractualism is closer to strong egalitarianism. In this theory, insofar as they are sentient beings, animals have moral rights such as a right to physical integrity. These rights may only be weighed up against human interests if the interests are important enough, i.e., if they are linked to claim rights such as the right to assistance. Otherwise trade-offs between animal and human interests are not admissible.

### 2.3.1 How to Do the Weighing

What could the weighing of interests in animal experiments concretely look like? One option is to understand it as a deliberative process consisting of three steps. The first step aims at formulating arguments for the experiment. The

**Table 2-1** Overview of the most prominent normative ethical theories and their attitude towards animal experimentation

| Ethical theory                       | Type  | Morally relevant feature  | Moral status of animals   | Attitude towards animal testing  |
|--------------------------------------|---|---|---|--|
| Kantianism                           | <i>Deontology</i><br>Certain kinds of actions are wrong as such, i.e., regardless of their consequences | <i>Autonomy</i> , understood as the ability to reason and to do what is morally required    | (Most) animals do not have autonomy and therefore lack dignity. Hence, there is no direct moral duty to animals. However, there is an indirect duty to refrain from cruelty to animals  | If animal experiments contribute to preserving or fostering autonomy or its prerequisites they are morally obligatory. Otherwise they may only be performed if the attitude underlying the experiment is free from cruelty towards animals and if the experiment is not suited to promote an attitude of brutalization |
| Strong egalitarianism                | <i>Deontology</i>   | <i>Autonomy</i> , understood as the ability to have desires (to be the "subject of a life") | All animals (at least mammals) are autonomous. Hence, they have dignity and must be respected like any other individuals with dignity   | Animal experiments cannot be justified. They must be completely banned   |
| Utilitarianism                       | <i>Consequentialism</i><br>The rightness of acts of any kind solely depends on their consequences       | Ability to feel pleasure/pain or ability to have desires                                    | All beings – including all animals – who can feel pain basically count alike  | Animal experiments are justified and must be performed if they help to increase the expected net benefit. If they are not likely to increase the expected net benefit they must not be performed   |
| Contractualism (standard version)    | <i>Deontology</i>   | Self-interest (interest not to be harmed and to be helped in situations of need)            | Animals have no direct moral standing. Hence, they have no moral rights. Therefore, there is no duty to respect these rights. However, they matter indirectly insofar as rational persons are interested in their well-being. | If animal experiments contribute to the protection or promotion of the moral rights of rational persons they are morally obligatory. Otherwise they should not be performed – at least not on animals whose well-being matters to rational persons.  |
| Contractualism (alternative version) | <i>Deontology</i>   | Self-interest (interest not to be harmed and to be helped in situations of need)            | All sentient beings – including animals – count alike: They have moral rights that must be respected  | Animal experiments can only be justified if the right of human beings to get help in concrete emergency situations outweighs the animals' right to physical integrity  |

aspects to be taken into consideration include in particular: the expected gain in knowledge and its significance; and, if it is applied research, the expected applications and their significance for the health or life quality of the affected human beings. Also part of the first step is the promotion of the three Rs. The second step aims at identifying arguments against the experiment. The aspects to be taken into consideration include in particular: the number and kind of animals being used, and the expected pain and suffering inflicted on them (severity levels). In addition, the researcher is asked to reflect on his knowledge of animal husbandry and animal behavior: Is he really acquainted with the symptoms of suffering in the animal species being used in the experiment? Do the conditions in which the animals are kept meet the standards required to avoid unnecessary pain and stress? The third step consists of weighing the pros and cons against each other. It seeks to determine whether the pros outweigh the cons or vice versa, i.e., whether or not the planned animal experiment is morally justified.

The main problem of this reading of the deliberative process is that it does not seem possible to quantify the individual steps. To justify the outcome of the third step with mathematical precision is therefore out of reach. Nonetheless, from this it does not necessarily follow that the results of the deliberation are arbitrary. Qualitative comparisons, especially of degrees of suffering, are possible. Note, however, that this way of conceptualizing the weighing of interests looks very much just like a utilitarian interpretation: We compare the expected benefits and harms, i.e., perform a benefit-risk analysis. If the conclusion is that the benefits for the affected human beings are greater than the risks the affected animals are exposed to, more precisely that the probability that the humans will gain more than the animals lose is greater than the probability that the animals lose more than the humans gain, the experiment is considered to be morally sound.

From a deontological point of view things look rather different – provided weighing up human against animal interests is deemed to be admissible at all. The main question here would be what rights and duties are affected by an animal experiment and in what way. This question cannot be answered by simply summing up the amount of benefit to be expected for human beings and the amount of harm to be expected for the animals involved in the experiment. Rather, what we would have to know is on the one hand whether the pain inflicted on the animals in case the experiment takes place is of a sort that violates their right to physical integrity and if so how severe this violation is; and on the other hand whether the hoped for benefits for human beings are firmly linked to the right to assistance (and therefore a corresponding duty to help) and how bad it would be to disregard this right in this situation.

### 2.3.2 Three Examples

Some examples may help to clarify further how the different ethical theories evaluate animal experiments.

- *Example 1: Experiments on rabbits in order to test new cosmetic ingredients*

Described in terms of interests, rabbits have an interest not to suffer, the consumers of cosmetic products have an interest to increase their well-being by using new products of this kind. How would the theories outlined above evaluate animal testing for this purpose? The answer is clear: They would unanimously reject it regardless of whether there are alternatives to animal testing. This, however, for different reasons. Strong egalitarians are vehemently opposed to any kind of animal experiments. Supporters of the alternative version of contractualism would argue that weighing up animal interests against human interests is inadmissible in this case since there is no conflict between different duties or moral rights. There is just one moral right affected: the right of



rabbits as sentient beings to bodily integrity – and thus just one duty: The duty to respect this right. Whereas there is no moral right on the side of consumers, i.e., no legitimate moral claim to new cosmetics. It would be morally wrong therefore to violate the right of rabbits to bodily integrity in order to enhance the well-being of some humans.

From the standpoint of standard contractualism and Kantianism comparing the human and animal interests involved would be the adequate way to decide whether cosmetic experiments on rabbits may be admitted. Both theories would deny that rabbits have a right to bodily integrity. Nevertheless, rabbits have an interest not to suffer which should be taken seriously. We should not inflict pain on animals without good reason because if we do this, it might lead to a similar behavior in our relations with other persons. A good, even compelling reason would be experiments that were necessary to protect human autonomy. This is not the case here: New cosmetics have no repercussions on autonomy. They may improve the well-being of some consumers, but that does not justify inflicting pain on rabbits, even more so as there are already a lot of cosmetics.

Utilitarians would subscribe to this conclusion. However, they would adduce other reasons to substantiate it. They would urge to weigh the animal and human interests involved by comparing the pains inflicted on the rabbits when testing cosmetic ingredients on the one hand, and the pleasure consumers may experience when using new cosmetics on the other hand. From their point of view moral rights are just as irrelevant as autonomy. The only thing that matters is the net amount of happiness, i.e., the total amount of pleasure minus the total amount of pain. The crucial argument would be that performing these experiments would presumably produce more pain and less pleasure overall than not performing them. Note that this claim might be false. In this case utilitarians would have to revise their verdict

and approve of experiments on rabbits to test cosmetic ingredients.

- *Example 2: Experiments on mice in order to develop a therapy for treating childhood leukemia*

Expressed in terms of interest, mice have an interest not to suffer and die, and the affected children have an interest not to suffer and die prematurely from a severe disease. There is no unanimity among the various moral theories on how to appraise this example. Provided mice are “subjects of a life” and in this sense autonomous, strong egalitarianism would oppose these experiments even if they were indispensable for the development of a therapy for treating childhood leukemia. The alternative version of contractualism would take the same view since mice are sentient beings and therefore have a right to physical integrity that must not be disregarded in order to help others.

Kantianism and the standard version of contractualism would agree that in this case weighing up animal interests against human interests is morally prohibited (given that this procedure is performed because it is an open question whether more weight should be given to human or to animal interests). They would argue that these experiments must be performed if there is the slightest chance that they may help to reach the goal of developing a therapy for leukemia. Kantians would emphasize that the mice must be sacrificed since we have a duty to do everything in our power to avoid that autonomy is harmed and since leukemia is a serious threat to autonomy and therefore to dignity: it is a disease which, if left untreated, has fatal consequences, thereby making the development and preservation of autonomy impossible.

Supporters of standard contractualism would point out that children have a right to get help, especially if the consequences of not helping are as grave as in the case at hand.

Since they have this moral right there is a corresponding duty to help them as much as possible. Mice on the other hand have no such right. They have no rights whatsoever. This does not mean that we are free to harm them as we please. They are sentient beings, able to feel pain and pleasure. We should not make them suffer without any reason. Yet mice have no right to physical integrity; therefore there is no moral duty to respect this right. For this reason there is no conflict between our duty to help affected children by developing a therapy for leukemia on the one hand and the suffering inflicted on the mice that are used as means to reach this goal on the other hand.

The only ethical theory in favor of weighing up animal against human interests in this case study is utilitarianism. Utilitarians would argue that the experiment is morally justified if the expected amount of pain reduction is greater than the amount of pain produced. They would then ask the researchers to figure out the net amount of pain inflicted on the mice used in the experiment as well as the net amount of pain reduction that would result if the experiment were successful. However, they would formulate a proviso: Since what is required is a risk-benefit analysis the experiment would only be warranted if there is a reasonable probability that using mice would indeed contribute to developing a therapy for childhood leukemia. Given this probability there is a moral obligation to conduct this kind of experiment. Otherwise performing it would be inadmissible.

- *Example 3: Experiment on Beagle dogs in order to perform an immunohistochemical evaluation of guided bone regeneration using different types of barrier membranes (Schwarz et al., 2008)*

The main aim of this experiment is to compare different barrier membranes with regard to their ability to support bone regeneration. It is designed as an *in vivo* experiment since *in vitro*

comparison is not possible. For this purpose 12 Beagle dogs, aged 20–24 months, with fully erupted permanent dentition would be used. These dogs would be subjected to two surgeries. In the first surgery the second premolar and first and second molars are planned to be extracted bilaterally in both jaws. In the second surgery after 4 months of healing, dehiscence-type defects will be created followed by the insertion of titanium implants. Subsequently, all defects will be filled with a bone-grafting material and covered by different types of barrier membranes. After a healing period of 1 to 12 weeks the dogs will be sacrificed, their jaws dissected and blocks containing the experimental specimens will be obtained.<sup>3</sup>

In terms of interest the Beagle dogs have an interest not to suffer and die prematurely, the scientists have an interest to compare the functionality of barrier membranes *in vivo*. However, the experiment can also be seen as part of a more comprehensive effort to help human patients whose bone structure makes the use of certain conventional dental implants impossible. After all, the reason for using Beagle dogs is not just that they are pleasant animals, but mainly that the morphology of their jaw bones and their chewing behavior is similar to that of humans.

From the perspective of strong egalitarianism, this experiment is unjustifiable like any animal experiment and should therefore not be performed. Kantian moral theory would reject the experiment if it is viewed in isolation, arguing that there is no connection between the expected gain in knowledge and the protection of autonomy. Furthermore, the pain inflicted on the dogs appears to be disproportionate in

<sup>3</sup>The main result of the study was that “all membranes investigated supported bone regeneration on an equivalent level” (Schwarz et al., 2008, p. 413). Note, however, that the experiment must be evaluated *ex ante*, i.e. before performing it and hence without knowing the result. So even though it was actually approved and then performed the issue here is whether it was morally right to approve it.

relation to new insights that might result. This verdict may be modified if the experiment is seen in a larger context, i.e. if the ultimate aim is the development of a new or improved technique for specific dental implants. This is only the case, however, if the experiment is a necessary intermediary step on the way towards this aim and if the aim itself is indeed directly linked to the protection or promotion of autonomy or its prerequisites.

The standard version of contractualism would put forward a similar argument. From the point of view of this theory inflicting considerable pain on dogs just for the sake of comparing the functionality of certain barrier membranes can hardly be morally warranted, especially since rational persons are usually more interested in the well-being of dogs than, say, in the well-being of rats. If, however, the experiment is a necessary means to the end of helping human beings with a specific health problem this assessment changes because that would mean that it contributes to the protection of a moral right of rational persons – the right to get adequate medical treatment. In this case performing the experiment would be morally mandatory.

The alternative version of contractualism would also oppose the experiment as such since dogs have a moral right to physical integrity that must not be violated in order to find out more about the functionality of barrier membranes. The reason for this is that moral rights may only be weighed up against other moral rights, not against interests (such as the interest in more knowledge) that are not protected by moral rights. The situation might change if comparing barrier membranes for guided bone regeneration using dogs is a precondition for an application of this surgical procedure on human patients. Then the question would arise whether these patients have a moral right to receive assistance and if so, whether this right (and the corresponding duty to help) outweighs the dogs' right to physical

integrity. If the answer is yes, the experiment is morally justified and should be performed; if the answer is no, the experiment is not justified and ought not to be performed.

According to utilitarianism it is essential for the assessment of any kind of animal testing that animal interests are weighed up against human interests. In this regard utilitarianism differs from the other relevant moral theories. In view of the experiment to be evaluated this means that the pain inflicted on the dogs must be weighed up against the expected gain in knowledge. If the net amount of pain is greater than the expected net amount of pleasure associated with the gain in knowledge the experiment is not justified; if it is the other way round it is justified.<sup>4</sup> Given that considerable pain would be inflicted on the dogs, utilitarians would question whether this pain can be outweighed by the knowledge which may be obtained. This evaluation may change, however, if the experiment can be regarded as an essential step in the development or improvement of a surgical procedure for a certain group of human patients. If the amount of human pain that presumably could be alleviated by this procedure is greater than the amount of pain inflicted on the dogs the experiment would be morally justified. There would be a moral duty therefore to perform it.

<sup>4</sup>Some utilitarians are value pluralists. They would argue that scientific knowledge is not only instrumentally, but also intrinsically valuable, i.e. valuable for its own sake regardless of whether it is needed for developing new technological or medical applications and regardless of whether it is associated with any kind of pleasant feelings. This view is problematic for two reasons. First, it is unclear why knowledge should be regarded as an intrinsic value. Second, if knowledge is deemed to be intrinsically valuable, comparing and weighing interests becomes even more difficult. For now not only pleasant and unpleasant feelings must be taken into consideration when summing up the pros and cons in order to calculate the net benefit, but also, as an independent aspect, the gain in knowledge. It is hard to see, however, what the "common currency" would be that allows comparing and aggregating these different values.

## 2.4 Conclusion

Ethics as a science aims at a rational justification of moral norms and actions. From an ethical point of view all animal experiments need a justification of this kind. This is a more challenging task than one might think at first sight – at least if it is correct that human beings do not have a special moral status just by virtue of being human. The relevant normative ethical theories agree that this is the case. From their perspective it cannot simply be taken for granted that basic or applied scientific research is morally warranted by the aim of benefiting humankind. We cannot just assume that animal experiments are justified if they are necessary for scientific progress and if the pain inflicted on the animals is minimized. Whether such experiments are admissible can only be decided on the basis of a case-by-case analysis. The main challenge here is that there is no agreed on set of criteria regarding the ethical evaluation of specific experiments as each normative ethical theory has its own criteria. This difficulty can be overcome if it is possible to determine which of these theories is the most plausible one. There is no reason to think that this is not possible. To show, however, which theory should be favored is beyond the scope of this chapter. Suffice it to say that despite their differences there is one issue about which all theories agree: When thinking about the ethical assessment of animal experiments the three-R principle is one criterion to be taken into account. It is not sufficient, however, to justify these experiments. From a justificatory perspective it is not enough to minimize the numbers of animals being used and the pain inflicted on them. Rather, this nega-

tive aspect must be weighed against the positive aspects of an experiment, i.e., the scientific objectives one strives to achieve. This is an open-ended process. The objectives may be important enough to justify the infliction of pain and suffering on the animals. If they are not important enough, however, it is a moral duty to refrain from performing the experiment.

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