Ethics and Animal Biotechnology: 
An analysis against the background of public policy in the Netherlands

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Introduction

Developments in animal biotechnology are debated in a lively manner, not only in the Netherlands, but in many other countries as well. This technology mobilizes strong forces in society. On the one hand it is said that it holds a promise for the production of vital life-saving preparations and huge economic benefits, on the other hand it seems to reduce animals - our fellow creatures, closely related to us - to production machines. People have the strong conviction that the development of animal biotechnology is morally problematic and that to secure some basic values public policy is necessary.¹

What are the anxieties and which basic values are at stake? That is the question we want to answer in this article. In doing so we shall refer to public debate in the Netherlands, which concentrates on transgenic (farm) animals, because it is our strong conviction that (at least some of) the issues which are being discussed in our country will arise in any discussion about moral questions in animal biotechnology.

Public concern

Why is animal biotechnology on the agenda? In Dutch society, but not only there, public concern about biotechnology can be specified in the following way).² The public is not very well informed about what is

² Report of the Advisory Committee on Ethics and Biotechnology in Animals. (Title: Ethics and Biotechnology in Animals), (NRLO, Wageningen, 1990), p.7ff.
going on. There is a gap between science and technology on one side and the public on the other. To many people biotechnology seems to be very opaque. It is developed in laboratories - behind 'closed' doors - by specialists. They are like 'magicians' who are 'playing God' by manipulating life in an incomprehensible way.

What are the consequences of biotechnology? This is an important concern, which may be interpreted in, at least, two directions: there is a fear of risks, perhaps in the long run (cf. for instance Softenon kids, DES daughters!) and on the other side there is a fear concerning the slippery slope, especially in view of the application of genetic technology to human beings, since (higher) animals - biologically closely related to us - are the object of biotechnological changes.

This so-called 'makeability' of new forms of life is another source for anxiety. Influenced perhaps by the media, the Animal Protection Movement, and by science fiction, the public realize that science and science fiction lie closely together. Call it the 'Boys of Brasil' or 'Jurassic Park' effect.

Moreover, the use of animals in itself causes questions. There is an increasing concern regarding the exploitation of animals in scientific research and bio-industry. People see genetic modification as another step in the direction of the reduction of animals to instruments of production. Animals are used as mere things.³

Concern about the social-economic consequences may be mentioned separately. Farmers for instance are afraid of becoming (more) dependent on pharmaceutical industries, particularly because of the probability of patenting biotechnological inventions in the field of agriculture and stock breeding. Moreover, what are the consequences for the developing countries? Some people fear that biotechnology will not feed the world but that patenting will make third world countries more dependent on western industries.

Last but not least, there is a credibility problem, an atmosphere of distrust towards science and technology. Scientific developments are driven by economic forces. According to many people the real goal of science and technology is economic gain, although they claim to pursue the 'common good'. Moreover science and technology seem to develop autonomously. How is it possible to influence or direct these far

reaching developments in a democratic society? How can we prevent the technocrats from manipulating public opinion? And when democratic control is possible, the question of the direction of the development becomes relevant. It forces us to ask whether technological development is a good thing in itself. If we say ‘It serves progress’, then it is necessary to know what progress is.4

That these anxieties were all present in Dutch society was confirmed by public debate, in May 1993, on genetic modification of animals.5 Much attention was paid to the slippery slope between animal biotechnology and application to genetic modification of human beings. The majority position of the lay panel resulted in a plea for a moratorium on genetic modification.

Growing awareness of the moral status of animals

One of the key points of public concern is the moral 'status' of animals. What is their position in morality? In order to clarify public debate on animal biotechnology it may be helpful to make some historical remarks on the position of animals in society.6 In Dutch society, there has been an increasing consciousness of the fact that animals are to be considered as objects of moral concern. One might distinguish here four steps.

In the first step cruelty to animals is seen as morally wrong. It is interesting to note, however, that, although it is recognized that animals can suffer, traditional arguments against cruelty are that it degenerates a person's moral quality7 or that it causes public offence (e.g. Dutch Penal Code of 1886).

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4 F. van Vugt and F. Brom, ‘Animal Biotechnology and Society: What are the issues?’ in Proceedings of the International Workshop on Animal Biotechnology, ed. M. McGloughlin (The Biotechnology Program, University of California, Davis, 1994), p.2: ‘But then what is progress? Is there a clear and unambiguous picture of where to go to bring us to a better situation? A Dutch comedian once defined progress as the situation in which all eskimos live in a centrally heated house and have to do their best to save money to buy a refrigerator.


In the second step experiments with animals are considered as a moral problem. Therefore they have to be justified. The proportionality argument enters into the discussion: End and means should be balanced against each other. Regulations concerning experiments with animals are not based on the degeneration of a person's moral quality but on the insight that animals themselves deserve protection.8

Thirdly, bioindustry and intensive cattle breeding become a moral problem. People realize that animal welfare is being threatened in factory farms. Farm animals run the risk of being reduced to mere production machines. There is an increasing awareness that animals have a moral status of their own, which is not to be reduced to a mere instrumental value for human ends.9

The most recent step is induced by developments in animal biotechnology. In the Netherlands the genetically modified bull Herman may be considered as a catalyst for this phase of the debate, which is still going on. Several points are discussed. We confine ourselves to two points:

1 Is the possibility to change the genetic make up of animals just another step in the process of domestication? Some call the new possibilities a sharp break10 and state that we need a new framework to discuss it. Others say it is business as usual and that therefore there is no problem at all. And finally there are people who seem to agree that animal biotechnology is in a sense business as usual but that this shows that domestication in itself is problematic.11 Behind these discussions there is a fundamental layer: philosophical and religious considerations in terms of Creation or evolution. Genetic modification is often seen as a violation of Creation or of 'the order of

8 A.N. Rowan and F.M. Loew, The animal research controversy, protest, process and public policy (Center for Animals and Public Policy, Tufts University School of Veterinary Medicine, Tuft, 1995).
11 For instance H. Verhoog, ‘Ethics and genetic engineering of animals’, in Morality, Worldview and Law; The Idea of a Universal Morality and its Critics, ed. A.A. Musschenga, G.Voorzanger and A. Soeterman (Van Gorcum, Assen, 1992), p.275: ‘The decision to interfere in the life of wild animals and to cage or domesticate them, becomes the first and very basic encroachment upon the intrinsic value of animals’.
Nature'. It is interesting to note that in the context of biotechnology the term 'playing God' pops up again and again.\textsuperscript{12}

2 Is animal biotechnology hazardous for the well-being of the animals involved? Since the experiments in Beltsville, Maryland in 1985 it is clear that genetic modification can cause great harm. In this experiment an attempt was made to change the meat-fat ratio by introducing foreign growth-promoting genes into pigs' genome. This experiment caused (unintended) consequences. The transgenic pigs made in this experiment were very ill. They had ‘a high incidence of gastric ulcers, arthritis, cardiomegaly, dermatitis, and renal disease.’\textsuperscript{13} This brings us to a central point in the discussion on animal biotechnology: do we know what we are doing?

One of the consequences of this process of increasing moral concern in Dutch society has been the acknowledgment, by the government, of the 'intrinsic value' of animals as a basis for official policy-making, from 1981 onwards.\textsuperscript{14} Recognizing the 'intrinsic value' of animals means that they are brought into the realm of morality. (We'll come back to this later on.)

In this context, the role of the Animal Protection Movement should be mentioned. It has been (and still is) very important for public discussion. Its position in Dutch society is less polarized than in other countries. Staff members are on speaking terms with official policy makers.

### Animals as proper objects of moral concern

How should we assess this development from a moral point of view? For we have to be careful not to make the mistake of a historical or sociological fallacy: developments in society as such are not morally normative. Feelings are facts and therefore they have to be taken seriously. But they are morally ambiguous. At best, they are markers of moral values not of moral decisions. The public concerns state different problems for ethical theory, like the status of nature, the fear for a slippery slope and so on.

We want to focus on one of problems involved; the so-called 'intrinsic value' of animals. It is used quite often in discussions on animal biotechnology, but it is not always clear what is meant by it. 'Intrinsic value' may have three different meanings.15

In a traditional moral context it means that a value is to be pursued for its own sake, whereas other values are instrumental. Take 'happiness' for example. We all hope and strive to be happy. In view of the (intrinsic) value of happiness values like money, love or knowledge are instrumental, in the sense that they may be instruments for becoming happy. By this example it may be clear that, in the traditional moral context, there are not many intrinsic values. Most values are, in some way or the other, instrumental.

In discussions on animal biotechnology, however, the term 'intrinsic value' is not being used in its traditional sense. It is not likely that we see animals as values to be pursued for their own sake. The meaning of the expression is, rather, that animals have an inherent worthiness, a worthiness of their own.16 They are not things, mere instruments or machines, but they are sentient beings, fellow creatures. In the context of biotechnology, then, the term 'intrinsic value' of animals is a way to express the point that animals, as sentient beings, are having, so to say, a 'plus' apart from their instrumental value. The acknowledgment of this 'plus' has become a cornerstone in Dutch legislation and official policy.

This meaning of the term 'intrinsic value' of animals has an important implication: Animals become morally relevant. They are proper objects of our moral concern. In other words, we are not allowed to do with them just whatever we like. In some way or the other we should show a certain respect as to their worthiness. As it is said in an official report17:

Especially the criticism of the use of animals as experimental animals and of livestock housing has resulted in the recognition that animals have a value of their own, or an intrinsic value, besides their instrumental value to man. In other words, man has to respect the intrinsic value of animals. Animals come to fall under the province of ethics, not in the sense that animals are thought to act morally, but in the sense that they are deserving our moral care.

We conclude that 'intrinsic value', as a term to characterize the moral status of animals, might be seen as the basic concept of an ethical theory and practice as to the human-animal relationship. In this sense it may be compared with a term like 'human dignity', another basic concept in ethical theory and practice.

Meanwhile, we have to admit that the content of the concept of 'intrinsic value' is rather vague. Does it mean that the Kantian principle 'never be treated solely as a means but always also as an end' should apply on animals? We don't think so. In the case of animals it means that animals have a 'plus', apart from their instrumental value for us, that they are proper objects of our moral concern. However it is not clear how this value should be operationalized in view of our behaviour and, more generally, the implications for public policy. But we think that the recognition that animals deserve our moral concern is a necessary step before we can decide what our moral concern in a concrete situation ought to be. In order to deal with concrete situations much work has to be done in shaping a clear conceptual framework and in specifying moral rules. It is foreseeable that in answering these questions consensus is far away.

**Public policy and law in the Netherlands**

One of the problems is that we live in a multiform society, in which there are a variety of answers to ethical questions. So we are facing a problem here. From the point of view of public morality we find ourselves in a situation of uncertainty. This uncertainty has, at least, two aspects, namely a moral and a political aspect. That is to say, the fact that we face an uncertainty in moralibus means that we are facing difficulties in policy making as well. As a matter of fact, policy makers have to cope with a problem that has four dimensions: (1) Public feelings, (2) moral problems, (3) philosophical and religious convictions, and (4) consequences for (public) policy. So, the problem we are facing is: How to deal with this uncertainty in (public) morality?

In this situation of uncertainty, in the Netherlands, a 'no unless policy' is being developed concerning animal biotechnology. Genetic modification of animals is ruled by three different kinds of legislation:
1 All genetic modification is controlled from a safety point of view: transgenic animals fall under GMO-regulations (GMO = Genetically Modified Organisms).

2 Animal experimentation is only allowed in licensed institutions. These institutions need a company-based committee that advises the company on acceptability of the experiments. Experiments are allowed if the human interests at stake are of greater value than animal discomfort caused by the experiment. Transgenic animals fall under this law if their making is an animal experiment, or if they are used in an animal experiment.

3 In 1992 the Animal Health and Welfare Act (AHWA) passed parliament after ten years of political discussion. It takes the form of a general law which (partly) has a 'no unless' structure: Acts which are dangerous to animal welfare are forbidden unless permitted by special regulation. Under the AHWA genetic modification of animals, cloning and the making of chimaeras is not permitted unless assent is given by the Minister of Agriculture, Nature Management and Fisheries. This permission will only be given after assessment of the moral acceptability of the project by an independent advisory committee of experts.

This means that any research project in the field of genetic modification of animals has to be assessed not only concerning the scientific quality and the risk aspects but concerning the ethical aspects as well. Biotechnological activities with animals are prohibited by the government unless it is not reasonable to think that relevant values are violated, or unless the aim is so important that the violation of these values may be overruled. In other words, there must be good reasons for carrying them out. This procedure is not meant to hamper the development of animal biotechnology, but it has to function as a tool against public fear.

To add to this 'no unless policy' we would suggest a distinction between two interpretations: (1) in principle and (2) in practice. From a moral point of view one can react to animal biotechnology with a conditional 'yes'. In other words, in principle it can be permitted to interfere in the genetic make-up of animals. From the perspective of public policy, however, we would suggest to react to animal biotechnology with a 'no unless'; not as a sign of hostility or conservatism but as a sign of care and caution in a situation of uncertainty as it has been indicated above. In short: a policy of prudence.
Evaluation framework

This assessment procedure involves the use of an 'evaluation framework'. The question 'What are good reasons?' has to be answered in the light of this evaluation framework. In this framework some principles play a role, reflecting the idea that animals enter into our moral horizon. These principles are partly a 'translation' into the animal realm of the four basic principles of bioethics\(^{18}\) (autonomy, beneficence, non-maleficence and justice):

*Respect for the 'integrity' of animals*

This principle states that we should respect the 'wholeness' of the individual animal and its species-specific behaviour. Biotechnology should strive to keep the homeostasis (self-regulation) of an animal intact.\(^{19}\)

*Non-maleficence*

This principle states that we should try to refrain from harming animals. And if we cause harm towards animals we should strive to minimalise it. Under this principle we can think of the 'Three R's' of animal experimentation (*Replace* animal use where possible, *Reduce* animal use where possible, and *Refine* animal research techniques so as to reduce animal pain and distress as much as possible).\(^{20}\)

*Beneficence*

This principle states that we should care for animal health and welfare. Research projects in animal biotechnology should not only strive to refrain from harm but should also try to promote animal health and wellbeing.

*Proportionality*

If we do harm an animal, the end should justify the means. ‘Even moderate levels of unrelieved suffering must be ethically countered by an arguable important scientific goal and a well-designed protocol. The more acute the suffering, the more important the goal and tighter the

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design, until we reach moral repugnance and the possible “beyond the pale” experiment.’\(^{21}\)

In addition to these four principles two other principles have been formulated:

**Possibility of redress**

The redress-principle is a type of precautionary principle. It has been derived from the work of the German ethicist Rendtorff.\(^ {22}\) The core content for the field of animal biotechnology is, that in using this technology one has to act in such a way that one can be corrected by the consequences of one’s actions. This first aspect of the principle is the question of safety-measures. In order to be able to be redressed by the consequences of particular action, these consequences need to be assessed. It is, however impossible to assess all consequences of an action. Some unforeseen consequences might become irreversible. This means that it is not possible to introduce a new technology without taking a risk. The principle of redress implies that in advance, in planning the application of a biotechnology (in an animal) the risk has to be assessed and safety-measures have to be taken.

The principle of redress, however, goes further. Even if we take in advance safety-measures, we still take risks. Despite our safety-measures, things might go wrong. This is the way, the redress-principle goes beyond the question of safety. Safety-measures alone are not enough to justify the risks of the introduction of new technologies. According to the principle of redress another question has to be answered. 'Have we done enough to imagine the possible consequences?’ By answering this question, we take responsibility, not only for what we know, but also for what we should know.\(^ {23}\) In this way we take responsibility for the possible consequences of actions we plan, beyond the consequences we actually know.

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\(^{23}\) In this way the principle of redress has a connection with Hans Jonas’ principle of responsibility (H. Jonas, *Das Prinzip Verantwortung. Versuch einer Ethik für die technologisch Zivilisation* (Suhrkamp Verlag, Frankfurt am Main, 1979/1989)).
Controllability

The principle of redress shows, that we can not introduce a new technology without taking some risks. Therefore we need also a principle of controllability. In an open and democratic society actions that touch upon important common values (such as safety) need to be discussed in the open. Public access towards information and effective democratic control are important corner-stones of modern democracies. Animal biotechnology, because of its opaqueness is in need of structures that can help in creating this oneness.

The burden of proof, then, is on the side of the one who wants to be involved in biotechnological activities. This has an important ethical impact: it challenges scientists and policy makers to make explicit their own moral judgments. In other words, they are challenged to reflect on what they are doing from a moral point of view. As mentioned above, we do not think that this procedure is meant to hamper the development of animal biotechnology. It is a tool to implement the principles previously stated.

The research institute has to do its own ethical evaluation. In this way ethics is not an 'extra' that comes from the outside but it may become integrated within normal decision-making structures. The committee of experts looks at the evaluation and their advice will be based on the assessment of it. The advisory-report with both the evaluation of the researchers and the assessment of the committee will be public. Individuals and pressure groups will get the opportunity to give their opinion before the minister decides whether or not an assent is given. In this way the controllability principle is applied.

The idea behind this policy is that, if we follow it, then it may become more and more clear what it means to acknowledge the moral status of animals and how that may be operationalized. In other words, a case by case approach is chosen, hoping that it may have a heuristic function. This heuristic function is necessary because of the vagueness of the values at stake and the uncertainties of consequences of these developments.

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24 It is of course allowed to keep scientific and technical information secret for commercial reasons.
Final remarks

* The recognition that animals deserve our moral concern is a cornerstone for public policy and for political and ethical discussions. The recognition that animals deserve our moral concern is a necessary step before we can decide what our moral concern in a concrete situation ought to be.

* Any discussion on the ethical aspects of animal biotechnology should aim at operationalisation in at least three directions: Public policy, business policy, and professional behaviour. In this discussion various aspects should be taken into account: Scientific, economic, environmental, social, ethical, political. And no aspect can have an a priori or absolute precedence over the others.25

* Biotechnologists and policy makers should not be neglecting cultural changes such as the ecological perspective and the increasing awareness that animals are within our moral horizon. Neither should they make the mistake to underestimate the importance of emotional strands in public opinion. We would like to underline, here, that animal biotechnology will only have a future if society wants to accept it.

* The Dutch 'no unless policy' implies a project-wise evaluation which has an important ethical impact. It challenges scientists and policymakers to make their moral judgements explicit. Moreover, this policy aims to create an open forum for public discussion. Such a policy is taking public concern and moral reflection seriously. In that way citizens are taken seriously, a necessity for any open and democratic society.

* It is important to create an ethical assessment procedure that can have a heuristic function. The vagueness of the values at stake asks for clarification and (new) moral insights.


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Biography

Dr. Frans W.A. Brom is an ethicist at Utrecht University (Faculty of Theology and the Center for Bio-ethics and Health Law) and he was co-secretary of the Provisional Committee for the ethical assessment of animal biotechnology. Prof. dr. Egbert Schroten is Chair of the Animal Biotechnology Committee and member of the Group of Advisers on Ethical Implications of Biotechnology (of the EC). He is Professor for Christian Ethics and Director of the Center for Bioethics and Health Law at Utrecht University.