

FOUNDATION FOR THE ANIMAL IN LAW

Head Office: Spitalgasse 9
P.O. Box 6164
CH-3001 Bern
Switzerland
Tel. + 41 31 - 311 40 45
Fax + 41 31 - 311 10 81

Branch office: Ilgenstrasse 22
P.O. Box 218
CH-8030 Zurich
Switzerland
Tel. +41 1 - 262 67 25
Fax +41 1 - 262 67 26
e-mail: TIR@GRLAW.CH

Zurich, September 14, 2001

„ANIMAL CLONING AND ANIMAL WELFARE LEGISLATION IN SWITZERLAND“

A Report by the Foundation for the Animal in the Law, CH-Berne/Zurich,
elaborated by Antoine F. Goetschel, JD, Director and Attorney-at-Law
for the Symposium at the University of Lueneburg, Germany,
January 28 – 30, 2000.

I. Summary

Cloning animals is not expressly regulated in Swiss animal welfare legislation. The techniques are still at the development stage which is why interference with living vertebrates or those intended to be born using cloning techniques is considered to be an animal experiment. However should the technique ever become routine, then provisions about the breeding and production of animals which are currently being worked out would apply. Animal welfare aspects of cloning and the traditional breeding and production of transgenic animals are being illuminated as they are closely connected. Since 1992 Swiss animal welfare legislation is also based on the constitutional term of the "Dignity of the Creature". The current state of the discussion against the background of animal experiments and transgenic animals will be briefly sketched. In addition, in the Canton of Zurich at least, animal welfare organizations have an indirect "association right of appeal against an administrative act" to challenge animal experiments before the courts. The office of "Lawyer for animal welfare in criminal cases in the Canton of Zurich" too, again unique, is aimed at ensuring increased application of animal welfare legislation by the courts.

II. Cloning

The artificial creation of genetically identical cells and living organisms by agamous reproduction of an initial cell is what is understood by cloning animals. "Dolly" the sheep was presented to the world's public in February 1997. "Dolly" is the first mammal to have been cloned from the cells of an adult animal (Wilmut, 1997).

History of the origins of cloning

However the cloning technique is older than that. The development towards the rapid and targeted "production" of working animals already started early in the 80s when it became possible in 1980 to genetically alter a mammal's genotype, that of a mouse. Scientists were able to split cattle and sheep embryos in vitro, to implant the split products in females and thereby to produce single egg, genetically identical multiple progeny (Willadsen, 1981, Ozil, 1983). Gradually the means towards even more favorable reproduction of working animals increased. A second method enabling mammals to be cloned was added in the mid 80s with nuclear transfer. Here the cell nuclei were isolated from early cells, still undifferentiated, and inserted in egg cells from which the nucleus had been removed in advance. The lambs which finally developed from the egg cells produced in this manner were clones which are genetically identical with the nucleus donating embryo. The nucleus transfer method was also successful in cattle, rabbits, pigs and goats following the first successful application in sheep. As in embryo splitting, the number of clones which could be produced remained too small. Nucleus transfer has a small success rate and the clones

have poor health, a much too high birth weight, premature abnormalities and commonly die shortly after birth.

"Megan", „Morag" and „Dolly"

Subsequently staff at the Roslin Institute in Scotland grew suitable embryonic cells in vitro and produced them to use them as nucleus donors. In 1995, the sheep "Megan" and "Morag" were the first cloned mammals whose nucleus derives from cultured and differentiated embryonic cells (Campbell, 1996). Then it was checked whether cells from fetuses and adult sheep could also serve as nucleus donors. Fibroblast cells from a 26 day old fetus and the udder cells of a six year old sheep were put in culture, permitted to grow and subjected to treatment which cancels out their differentiation. Then the cells treated were merged with denucleated egg cells and placed in pseudopregnant sheep. While the lamb whose nucleus derived from a fetal fibroblast cell died shortly after birth, the other sheep created headlines: "Dolly" the first mammal to have been cloned from the cells of an adult animal (Wilmut, 1997). Subsequently cloned calves, lambs, cattle, sheep and goats were produced world-wide.

Cloning, nucleus transfer and transgenicity; „Polly"

However commercial application is not anticipated from the cloning of working animals alone but from its being linked to nucleus transfer and transgenicity. Production of transgenic working animals has always had to cope with poor efficacy, poor predictability, sick animals and high costs (Wall, 1996, Pinkert, 1999). Attempts at obtaining embryonic stem cells from working animals such as sheep, cattle, goats and pigs to catch up with the success the chemical and pharmaceutical industries had in producing transgenic mice from these same cells failed. However it emerged that new means could lead to success more rapidly. Thus the fibroblast cells of a sheep fetus were produced in vitro and the human factor IX gene was implanted into their genotype. The cells checked for transgenicity were merged with denucleated egg cells and inserted in pseudopregnant sheep. "Polly" is the first cloned sheep to carry a foreign gene in its genotype (Schnieke, 1997).

Cloning cannot be looked at in isolation due to the current development in techniques. The animal welfare aspect as regards nucleus transfer and especially transgenicity must each be included in this assessment.

Possible spheres of application

For the first time working animal science has a large number of cells available from nucleus transfer in particular which are capable of genetic manipulation. Among other things, combining transgenesis and nucleus transfer could permit the sexual

determination of the transgenic progeny. As in transgenic mice, genes could be specifically eliminated and inserted and transgenic chimerae would be avoided (Wilmut, 1999; Wolf, 1998). Even if other sheep, cattle and goats have meanwhile been cloned and born transgenically, the technique is not perfected by a long way.

III. **Animal cloning under the Swiss Animal Welfare Act**

Cloning animals is not expressly regulated under Swiss animal welfare legislation. The animal cloning technique is still at the development stage. Thus the development of a method is an animal experiment under the meaning of Article 12 of the Animal Welfare Act of March 9th 1978, July 1st 1995 version and of Article 60 of the Animal Welfare Regulation of May 27th 1981, October 27th 1998 version.

Animal Welfare Act

Article 12 Term

Any measure in which living animals are used with the aim of checking a scientific assumption, acquiring information, obtaining or checking a substance or determining the effect of a particular measure on animals and the use of animals for behavioral research is considered to be an animal experiment.

Article 13 1) Restriction to an absolutely essential degree

1 Animal experiments which cause the animal pain, suffering or injury, may terrify it or considerably affect its general wellbeing must be restricted to the degree which is absolutely essential.

The Executive Federal Council determines the criteria for assessing the absolutely essential degree.

It can declare certain experimental purposes as being impermissible.

Article 13a 2) Compulsory registration and authorization obligation

1 Anybody wishing to undertake animal experiments must notify this to the cantonal authorities.

2 According to Article 13, Paragraph 1, animal experiments may only be undertaken with authorization. Authorization has a time limit placed on it.

Animal Welfare Regulation

Article 60 Authorization obligation

1 According to Article 13, Paragraph 1 of the Act, animal experiments may only be undertaken with authorization.

2 Authorization is required in particular for animal experiments within the framework of which:

...

e. Animals are infected with micro-organisms or parasites or they are immunized or cell material is administered to them, even if this is for diagnostic purposes.

...

g. Animals are worked with in which it must be assumed that pain, suffering, injury or terror can arise or whose general wellbeing can be considerably affected because of their particular phenotype or genes.

h. Germ cells, embryos or larvae are worked on and the experiments continue beyond the birth or hatching date or larval stage.

Article 61 Prerequisites for authorization

1 According to Article 13, Paragraph 1 of the Act, an animal experiment may be authorized if in particular:

- a. A purpose is intended by the animal experiment in accordance with Article 14.
- b. The method is in accordance with Article 16 of the Act.
- c. The method is appropriate for obtaining the aim of the experiment bearing the latest level of knowledge in mind.
- d. The species of animal intended cannot be substituted by one at a lower stage of development.
- e. The smallest number of animals necessary is used with the most suitable procedures for assessing the results of the experiment being taken into consideration.
- f. The requirements for keeping animals are satisfied.
- g. The requirements regarding the animals' origin are satisfied.
- h. The trial manager and those undertaking the experiments satisfy the requirements regarding training and further education according to section 1a .

According to this the animal experiment requires authorization and must be restricted to the "degree absolutely essential". The provisions on animal experiments are to be found in Articles 12 to 19b of the Animal Welfare Act, Articles 58 - 64b of the Animal Welfare Decree and in numerous guidelines and information sheets issued by the Federal Office for Veterinary Matters.

Should animal cloning ever become a matter of routine, then currently there are no provisions about it under Swiss animal welfare legislation.

However the Animal Welfare Act is being revised: As a result of the people's initiative "to protect life and the environment against genetic manipulation (gene welfare initiative)", which was rejected by the people and the cantons in 1998 and which demanded a ban on the production and trade in transgenic animals, the so-called gene legislation package came into being. This sought the revision of various laws protecting human beings, animals and plants against gene manipulation and the implementation of the constitutional term "the dignity of the creature" which will subsequently be referred to in more detail. A new version of the provisions on animal breeding and genetic engineering manipulations in animals is planned but currently under political discussion. The Executive Federal Council's draft dated March 1st 2000 runs as follows:

On March 1st 2000 the Executive Federal Council passed the gene legislation communication. This contains its suggestions about matters including the breeding and reproduction of animals. The Executive Federal Council suggests the following text to Parliament:

Article 7a (new) TschG (Animal Welfare Act) Breeding and Reproduction of Animals:

1. The application of natural and genetic or other artificial breeding and reproduction methods must not cause any pain, suffering, injury or behavioral disorders dependent on or connected with the breeding purpose in the parent animals and the progeny. The provisions on animal experiments remain reserved.

2. The Executive Council passes regulations on the breeding and reproduction of animals and determines the criteria for assessing the permissibility of breeding aims and reproduction methods. In so doing it takes the dignity of the creature into consideration. It can forbid the breeding, reproduction and keeping of animals with particular characteristics.

Article 22 Paragraph 3

3. The Executive Council can forbid further handling of animals, especially if this disregards the dignity of the creature.

Article 29 Item 1 Provision a^a and a^b (new) TSchG:

1. Anybody deliberately ^{breeding} or reproducing animals against the rules of aa (Article. 7a);

.... (will be punished by imprisonment or a fine of up to 20,000 CHF if Article 27 of this Act does not apply. If the offender acts negligently, then the punishment is a fine).

Thus the cloning of animals would fall under the provisions regarding the breeding and reproduction of animals, unless it is an animal experiment because it is at the development stage. According to the Federal Council's suggestion, no pain, suffering, injury or behavioral disorder connected with the breeding aim may arise in the parent animals and the progeny through cloning (Article. 7a Paragraph 1). The Federal Council can forbid the reproduction of animals with particular characteristics and must pass regulations regarding the reproduction of animals where it should be taking the dignity of the creature into consideration (Article. 7a Paragraph 2).

Breeding working animals and the Council of Europe

The intended provisions are not merely placed against the background of the so-called gene legislation package but also within an international context. Thus they also take account of the provisions on breeding agricultural working animals according to the amendment protocol dated February 6th 1992 on the Council of Europe's convention on the welfare of animals in agriculture dated March 10th 1976. The protocol amends and supplements the convention by including regulations about natural and artificial breeding methods including genetic interventions amongst other things. A new Article 3 was inserted in the convention according to which natural or artificial breeding or breeding methods in which one of the animals involved is or could be caused suffering or injury cannot be undertaken or used. An animal may only be kept for agricultural purposes if there is a well-founded prospect based on its phenotype or genotype that the animal can be kept without damaging effects on its health or wellbeing. Extreme performance breeding which imposes a strain on animals should therefore be forbidden and traditionally bred or transgenic animals only used in agriculture when their health and wellbeing are guaranteed.

Thus the welfare of all working animals and of the progeny against breeding imposing strain is clarified, breeding which can be both natural and artificial which comprises new biotechnology and genetic engineering methods (described in Berg 1997). Harmful effects on the health or the wellbeing of the working animal which is kept for agriculture are not permissible according to this, if they are foreseeable because of the phenotype or genotype.

The additional protocol provide the Council of Europe with the authority to issue recommendations on breeding and genetic engineering methods in working animal keeping. It can prohibit practical forms cruel to animals in the breeding of such animals. Thus for instance the breeding of animals with considerable birth problems caused by inheritance or with lasting physical abnormalities can be prevented (report by the Swiss Executive Federal Council on amendment protocol dated January 26th 1994, no. 94.011, 4 onwards). By comparison however the Council of Europe's new breeding article rightly requires not merely "considerable" suffering or injury or permanent or long-term impairment of the animal's health or of the animal's wellbeing. Even short-term pain or suffering of an animal or non-permanent disturbances to health or limitations to the animal's wellbeing suffice to infringe the Council of Europe's breeding article. Whether slight changes in the anatomical or physiological characteristics of genetically manipulated working animals should be accepted as demanded by industry depends on whether at the most only slight injury or suffering occur in the animals used or produced. They may only be kept and used in agriculture where there is a well-founded prospect of the lack of injurious effects on the health or wellbeing of the animal (Article. 3 additional protocol versus Berg, 1997, 577).

Working animal breeding and the European Community

Currently Switzerland is not a member of the European Community which is why it is unnecessary in the present context to deal with the corresponding provisions in more detail. However it should be pointed out that the various decrees at European Community level on the breeding of agricultural working animals are, simply expressed, not aimed at animal welfare but at animal breeding, such as the Directives on cattle breeding (RL 87/328/EEC of the Council dated 18. 6. 1987 on the authorization of pure-bred breeding cattle for breeding; ABl. 87 L 167, of pigs (RL 88/661/EEC of the Council dated 19.12. 1988 on animal breeding standards for breeding pigs (ABl. 88/L 382, and RL 90/118/EEC of the Council dated 5.3.1990 on the authorization of pure-bred breeding pigs for breeding; ABl. 90/L 71) and of sheep and goats (RL of the Council 89/361/EEC dated 30.5.1989 on pure-bred breeding sheep and goats; ABl. 89/L 153). Commercial considerations primarily determine the need for action in the field of agricultural animal breeding. What is aimed at is the animals' efficiency which in general can only be achieved by healthy and robust animals.

With their interest in healthy animals, the aims of economic animal welfare which dominate agricultural working animal breeding commonly coincide to a certain degree with ethical animal welfare. However animal welfare requirements extend far beyond animal health towards conditions suitable for animals and the development of natural requirements for life and movement. Even if selection in agricultural working animal breeding is not solely according to efficiency criteria, but characteristics such as fertility and appearance are taken into consideration at the same time, animal welfare problems in working animal breeding make clear that the purely breeding point of view is not sufficient when protecting the animal's wellbeing.

The Council's 98/58/EC Directive dated July 20th 1998 on the welfare of agricultural working animals (Official Journal 221 dated 8.8.1998) is intended to fill this gap. It takes up the Council of Europe's regulation in the amendment protocol but simultaneously waters it down with an exception regulation. Article 20 of the annex runs: "Natural or artificial breeding methods which cause or can cause animals suffering or injury may not be used." This regulation does not exclude the use of certain procedures which could possibly cause passing suffering or injuries or require measures which possibly cause no permanent injury in so far as this is permissible according to the provisions in the individual states." Article 21 of the annex moreover records that: "Animals may only be kept for agricultural purposes when due to their genotype or phenotype it can correctly be assumed that keeping them does not affect their health and their wellbeing."

Thus natural or artificial breeding methods which in animals are proven to be or may be accompanied by suffering or injury may not be used (Voetz, 1998, 185). It thus already considerably restricts Article 3 of the amendment protocol and requires the certainty or probability of suffering or injury occurring. Even more restrictively it says that this regulation does not exclude the use of certain procedures which possibly cause only slight or passing suffering which are probably not accompanied by permanent suffering in so far as this is permissible by the provisions in the individual states. Thus from an animal welfare point of view a regrettably considerable watering down of the Council of Europe's new breeding article is evident at EU level. Currently only the clear proviso in favor of individual states' legislation is comforting which can provide for stronger regulations on faulty breeding which hopefully will be regularly used to protect animals.

IV. Animal welfare aspects of animal cloning

Low efficiency / high animal attrition

Low efficiency is a major problem in genetic intervention and nucleus transfer of working animals which are not transgenic. Only a few of the embryos produced

complete their development. Thus only one animal was born alive out of 277 reconstructed embryos for "Dolly" (Wilmut, 1997). Two were born alive out of 92 reconstructed cloned goat embryos (Baguisi, 1999). Two were born alive out of 89 reconstructed cloned sheep (Schnieke, 1997). Four animals were born alive of 276 transgenic cattle (Cibelli, 1998). Efficiency varies in these trials between 0.36% and 2.225% (Also Idel, 1998, 109; Trachsel, 1996b, 7 onwards).

High death rate

The death rate in new-born cloned animals is high. Thus about 8 out of 15 calves cloned from adult cells died within three days of birth in Japan (Saegusa, 1998). According to a study which appeared in 1999, the death rate of cloned animals shortly before or after birth is between 30 % and 74 % (Neue Zürcher Zeitung no. 97, dated 26. April 2000, p. 71).

High birth weight

The most remarkable characteristic is the high birth weight of new-born cloned animals (Idel, 1999). Birth weights which are double the normal are not unusual and commonly force the use of a caesarean section which is called "large offspring syndrome". In general this phenomenon seems to occur when an animal embryo is kept in a culture medium for several days, during artificial fertilisation for instance.

Deformities

A calf produced by scientists at the Institut National de la Recherche Agronomique at Jouy-en-Josas in France from the ear cell of an adult cow showed considerably reduced red and white blood cell values four weeks after birth and died six weeks after birth. Here several faults were discovered in the lymph system, the thymus and spleen and the lymph nodes had not developed normally (Renard, 1999). Shortened telomeres, that is ends of chromosomes, were found in "Dolly" (Shiels, 1999). Telomeres shorten during the aging process in every cell division. "Dolly" obviously inherited shortened telomeres since she was produced from the udder cell of an adult sheep.

Animal welfare aspects of traditional working animal breeding

Grave animal welfare problems can already occur in traditional working animal breeding. Cloning animals along with transgenicity and nucleus transfer is likely to expose animals to even greater and different strain than before. Thus in traditional working animal breeding painful udder inflammation occurs considerably more often in cattle or delivery problems or regular caesarian sections due to excessive in-

breeding for meat production. Increased tongue size, jaw shortening, laryngostenosis and increased susceptibility to stress can also result (Wegner, 1997, 556 - 558). The useful life and the life-span of cows has decreased by approx. a third with increased milk production (Rusche, 1996, 272). Due to over production of ham, paralyses can arise in pigs where the skeletons and joints cannot keep up, along with inadequate oxygen provision to muscles and the associated susceptibility to stress. Approx. one million pigs die painfully in Germany alone annually from stress myopathy (movement disorders due to necrosis in muscles and lack of meat quality) caused by breeding for excessive meat deposit and accelerated growth (Bickhardt, 1997, 59, 64; Sommer, 1997, 90 onwards; Wegner, 1997, 558 onwards). Poultry with excessively rapid growth can suffer from skeletal deformities and movement disorders, from cartilage disorders and bone deformities, when being fattened from heart and circulatory problems, leg problems. Laying hybrids suffer from oviduct inflammation, breastbone deformities and fractures (Oester et al, 1997, 187; Kaleta and Kostka, 1997, 104; for turkey fattening and breeding cf. Hafez et al., 1997, 132 - 138, and Hirt, 1997, 127 - 133). Immediately after hatching male chicks are selected and killed as they are commercially of no interest for breeding layers, which is considered justified by the authorities and is legitimized by the EU Slaughter Directive 93/119/EC. However killing merely because of sexual characteristics and commercial considerations remains ethically questionable (Brandhuber, 1994, 41 onwards; re increased susceptibility to illness and behavioral disorders in working animals due to factory farming, Caspar critically, 1999, 211 - 217; re terms about the terms technopathy and ethopathy used by Caspar cf. Kaleta and Kostka, 1997, 89-104).

In addition, transgenic animals can fall ill or die amongst other things due to the following pathological changes, namely due to deformities and death in the embryonic state, due to excessive size and deformities at birth, postnatally due to skeletal deformities, defects in the central nervous system, due to defective organ function, retardation in growth, tumor formation, resistance to infection and early death. Where reproduction is concerned they can suffer from sterility or other defects (Mossmann, 1998, 72).

Animal welfare aspects in the breeding of experimental animals

Suitable "animal models" are specially created for particular trials by systematic breeding and the use of genetic engineering and which are standardized or provided with pathological states on purpose. In addition to these (traditionally bred) laboratory animals with syndromes caused genetically, transonic animals are increasingly used in many areas of research and application which are manipulated by targeted changes in genotype according to particular scientific requirements.

Numerous transgenic or knock-out mice are used in fundamental and human medicine, that is those with targeted genes eliminated, and also genetically manipulated pigs, particularly in the research field of xenotransplantation. Research already has well over 10,000 transgenic animal models available for medical complaints such as diabetes, obesity, cancer, Alzheimer's, cystic fibrosis, hypertension or AIDS.

Various problems relating to animal welfare arise both in traditional breeding and in genetic engineering manipulation of experimental animals. Thus the production of genetically manipulated experimental animals also involves a very high use of animals due to the low success rate (Trachsel 1996a and b; also Bürki, 1997, 573 - 575). Many products can also clearly be regarded as breeds with defects such as experimental animals with predetermined susceptibility to disease in particular. However these are not prohibited as in the field of working animal or domestic animal breeding, because the ban on breeding defective animals expressly does not apply to mammals altered by breeding or biotechnological or genetic engineering measures, which are required for scientific purposes. The increased risk of unexpected strain arises additionally in transgenic animals.

V. Animal ethics aspects of animal cloning

There are ethical questions involved in the area of genetic engineering interventions in animals which cannot be dealt with satisfactorily in our view by the classical instruments of animal welfare. The difficulties are only increased by the possibility of producing identical living organisms through cloning. Living organisms can be exploited to a degree not previously possible.

A number of authors are of the opinion that even producing transgenic animals is in principle no longer acceptable from an ethical point of view. Thus some of the moral philosophers equate the integrity of the genome with the "individual property" of an animal (Rolston, 1988, 98 onwards). In addition, the fact of whether altering the original purpose of the species is reconcilable with ethical animal welfare is called into question (Fox, 1992; Sitter-Liver, 1996, 361; Praetorius and Saladin, 1996, 44). According to this view, there is an obligation for a particular type of creature to lead a life which is a good, thriving life in the sense of the particular standards for this species. Thus it is not in accordance with the original purpose of a sheep to produce pharmaceutical agents (Balzer, Rippe, Schaber, 1997, 38; Goetschel, 1998). According to another controversial view a living organism's own property applies to those functions and options which members of a species can exercise as a rule (Holland, 1990; Attfield, 1995; Balzer, Rippe, Schaber, 1997, 41-44).

The question of an animal's claim to its own identity, to an end in itself lies behind these considerations. The more recent developments in the field of cloning and transgenicity suggest that this question should not just be left to a discussion amongst

moral philosophers. Rather it requires that the traditional notion of animal welfare as protecting animals against pain, suffering, injury and fear must be thought over, expanded and converted into legislation.

VI. Important contents and structures in Swiss animal welfare legislation

Animal welfare legislation in Switzerland contains some peculiarities which are worth noting for dealing with certain questions at an international level also. Thus more recent ways mankind deals with animals, in particular in the field of genetic engineering, animal breeding and recently cloning animals have led to the realization that the notion of "animal welfare" to date must be radically expanded. So the notion of the "dignity of the creature" has found a place in the Swiss Basic Law and in the Swiss Federal Constitution, which will be referred to again.

It has also begun to be recognized that implementation of legal animal welfare must not be entrusted to the state alone. So organized animal welfare was given the opportunity of participating in the administrative and legal proceedings in particular areas of animal welfare from a legally secured position. Therefore the indirect right of appeal by associations which animal welfare organizations have in animal welfare matters will be set out below, along with the Office of the Lawyer for Animal Welfare in Criminal Matters, which again is unique.

a) The dignity of the creature

Origin

According to the existing Animal Welfare Act of 1981 animals have no actual rights but interest in freedom from pain, in physical and mental integrity and in life worth protecting. However the fact that an animal is more than just an object with certain interests was also established by the Federal Court in 1989 when it recognized an animal as a "living and feeling being, as a fellow creature (...) the respect and esteem for which represents a moral assumption for man who is superior due to his intellect" (Ruling of the Federal Court BGE 115 IV 254). Here the Federal Court referred to the notion of the fellow creature elaborated by Fritz Blanke in 1959 and pointing in the same direction referring to the view of Karl Barth, the theologian in 1945, according to which animals have their own dignity worth protecting. The notion of the dignity of the creature was included in the Aargau cantonal constitution in 1980. The discussion about protecting animals against genetic engineering and reproductive medicine and about the concept of being able to patent animals which flared up at the end of the 80's brought about a demand from animal welfare circles that the notion of the dignity of the creature be included in the federal constitution (Goetschel 1989 p. 31), which then also occurred in the referendum on May 17th

1992: Article 24^{novies} Paragraph 3 of the existing Article and Article 120 Paragraph 2 of the new federal constitution therefore run as follows:

"The Federation issues regulations about dealing with the germ type and genotype of animals, plants and other organisms. In so doing it takes *the dignity of the creature* and the safety of man, animals and the environment into account and protects the genetic diversity of animal and plant species."

Here the Reporter in the National Council, Mr. Darbellay expressly emphasizes that: „We wish to show by this that man if he is involved in creation is a creature himself and he cannot do anything he likes; he must respect the dignity of this creation."

Although a new and serious constitutional concept has been available for about eight years, the discussion on its contents and scope has only begun as far as we are aware. Now there are writings and suggestions from philosophers, theologians and lawyers such as (and chronologically ahead of everybody) Teutsch, Saladin, Schweizer, Balzer, Rippe and Schaber, Bondolfi, Krepper, Praetorius and Goetschel. The Swiss Ethics Commission for Genetic Engineering was also used in the non-human field. From it the population and the administration expect to have the constitutional provision put into concrete terms and inserted in legislation which is not however currently available.

Relationship with the dignity of man

Without being able to go into detail, human dignity can be divided into two different notions: On the one hand into the position supporting the triumphal and anthropocentric humanism of a Renaissance philosopher like Giovanni Pico della Mirandola (*De dignitate hominis*, 1487), according to which man is classified as "only slightly below God" in an over interpretation of psalm 8. Human rights are considered chiefly as claims against this background. On the other hand into the position of human dignity as an expression of morality, according to which the "real dignity of man consists in the precise observation of his obligations". Dignity as the ability man has to impose obligations on himself and to satisfy them was represented mainly by Kant. Robert Spaemann and Beat Sitter-Liver belong to this tradition as regards man's obligation to become responsible for nature and animals in accordance with his dignity. So it can be stated that the notion of the dignity of the animal requiring respect as an obligation arises from the dignity of man. Looked at like this one can only stand up for human rights in a very limited fashion if one remains silent about the dignity of all creation and its members and about man. On the other hand, anybody wishing to see the dignity of the creature protected must of necessity also protect human dignity. Thus the dignity of a creature cannot take anything away from the dignity of man (Teutsch, 1995, 27 onwards).

The significance of the creature's dignity

In the wording chosen by the creator of constitutional law one can assume according to predominant teaching that the dignity of the creature must not just be protected in the field of genetic engineering. Rather it covers the whole legal relationship between man and animals. The dignity of the creature now protected according to the constitution forms the legal basis for various thematic areas relevant to animal welfare: Thus for example the genetic manipulation of animals, animal experiments, the breeding of animals and various other forthcoming reviews of animal welfare legislation.

Possible content of the dignity of the creature

Beginnings based on human dignity

The discussion about human dignity could be considered as a start. Thus in the area of human welfare it is illegal to ridicule somebody else and in particular the equipping of recruits with uniforms which are much too large to make them ridiculous violates their human dignity. That is *why in* animal breeding the question arises whether breeding for particular purposes should not be questioned or indeed forbidden such as that for so-called aesthetic purposes if the animal not only suffers because of it but also has his dignity, his intrinsic value violated and is thus exposed to ridicule.

In animal breeding

The political debate about animal breeding has chronicled a clear need for action. For instance the German animal welfare legislation underwent an alteration in the so-called "cruel breeding paragraphs" 11 b. Since Switzerland expressly also protects the dignity of the animal it must expand the welfare to date of animals against pain, suffering or injury. The protection of animals in animal breeding merely against suffering, pain or injury now planned in Germany accordingly only represents a minimum requirement.

Animals in animal experiments, cloned and transgenic animals

Ethical problems arise in the area of genetic engineering interventions in animals which in our view cannot be satisfactorily dealt with by the classical instruments of the authorization process for animal experiments. Thus the distinguished animal welfare moral philosopher Gotthard M. Teutsch considers animals dignity violated "if they are chiefly regarded as the means and too little as the purpose, that is ... if their integrity is somehow violated without compelling reasons, although one would still need to clarify whether and to what extent there are any compelling reasons at all

for such violation" (Teutsch, 1995, 56; also 47-50). The demand for a ban on the production, acquisition and passing on of cloned or transgenic animals is supported by this position (instead of many: Sitter, 1999, 477).

Animal experiments must be restricted to the absolutely essential degree according to Swiss law (Article . 13 Paragraph 12 of the Animal Welfare Act). The extent to which the authorization procedure needs to be refined when not only traditional but also cloned and transgenic animals require assessment, cannot be conclusively commented upon. However this may not be satisfactory from an animal welfare point of view if a controversial animal experiment authorization cannot be brought to court by organized animal welfare with the request to test its legality. Refusal of an animal experiment authorization sought can be legally challenged by the experimenter, but the approval cannot be challenged by individuals who are championing the welfare of animals. And it is just in cases of doubt as in the cloning of animals with the main long-term aim of improving the profitability of animal use that in a constitutional state not only the administrative authorities but also the courts should be able to discuss it.

b) Right of appeal for animal welfare in administrative law

Recognized animal welfare organizations were entitled by the right of appeal of associations against an administrative act to challenge administrative authorities' illegal orders (Saladin, 1993, 52-54, 61 onwards; Sitter, 1990, 188-190; Wirth and Goetschel, 1989, 88-94 and 99-144). Indeed the existing imbalance in the representation of interests in animal welfare procedures gives a sense of being strange and unjust. An animal owner can challenge an order which restricts him, a ban on keeping animals for instance. Nobody can defend the animal, at most the public administration which from experience does not suffice (Saladin, 1993, 51). In particular an animal welfare association cannot support the animal infringed, even if it has devoted itself for decades to the welfare of animals. Thus a long-established Swiss animal welfare association which went to court about a neglected and abused dog handed in to one of its homes had to let itself be told by the federal court that the association was not more affected in this case than any third party and was therefore not entitled at all to lodge an appeal (unpublished decision of the Swiss federal court dated 27.1.1989). Animal welfare organizations are kept away from legal animal welfare administrative procedures. They are excluded from responsibility and often do not even find out how a procedure initiated by them has ended.

Here we are dealing with a *structural deficiency* which can be *eliminated by the association's* right of appeal against an administrative act in administrative law. Just as in the association's appeal against an administrative act for environmental and nature conservation organizations already in existence in Switzerland the recognized

animal welfare associations would be authorized to examine administrative files and if necessary to bring a decision to a judicial authority. The effects to be expected from the participation of animal welfare organizations in procedures should contribute considerably to achieving the aim of better legal protection for animals. Thus not only was equality of arms between the parties attained. A forfeiture would arise from this as the authorities and parties applying the law would be obliged to seriously come to grips with the matter of animal welfare (cf. Sidhom, 1995, 193 onwards, with references). The enforcement agencies would be strengthened since they could refer to an idealistic alliance when dealing with a party behaving contrary to animal welfare and faced with the threat of an appeal. The granting of an official appeal procedure would increasingly direct animal welfare activity into proper legal channels and thus facilitate proper enforcement. And the generally well-known positive effects of legal redress procedures would also benefit animal welfare and would encourage increased publicity about animal welfare, the promotion of further legal education and improved observance of equality before the law in the application of the law.

Indirect right of associations to appeal against an administrative act in the field of animal experiments

The beginnings of a right of associations to appeal against an administrative act already exist. Thus for instance the Canton Zurich Animal Welfare Law dated June 2nd 1991 grants at least *three members of the cantonal Animal Experiment Commission* acting together the right, within the meaning of an indirect right of action of an association, to legally challenge animal experiment authorizations provided by the cantonal National Economy Administration (§ 12 Paragraph 2 of the Canton Zurich Animal Welfare Law dated June 2nd 1991). Just three members of this commission are chosen based on suggestions from the animal welfare organizations. So while animal welfare associations do not have the right to submit an authorization decision by the National Economic Administration to an instance of recourse within the administration and then to a court, three representatives appointed by them do have the right (Saladin, 1993 54-56; Danner, 1993, 71 onwards; Leuthold, 1995). The Swiss Federal Office for Veterinary Matters also has the right of administrative appeal against an administrative act against cantonal animal experiment authorizations within the meaning of Article. 26a of the revised Animal Welfare Act (Lehmann, 1995).

However the endeavors regarding the association's right of action in administrative matters must not mislead about the fact that proper enforcement of the animal welfare legislation cannot be replaced by it. In the final analysis only administrative law administrative decisions can be challenged in the main. Instances of violations of animal welfare constantly arise which have no connection with administrative decisions.

c. Right of appeal in criminal law / animal welfare lawyer

In Switzerland organized animal welfare can only become aware at all of convictions and sentences unsatisfactory from an animal welfare standpoint or of discontinuance decisions or in particular situations (for instance if an animal owner reports somebody cruel to animals and submits the case files to an animal welfare association or is represented by a lawyer involved in animal welfare). An animal welfare association was not able to make an application to extend the investigation. It also did not have the right to challenge discontinuance decisions or court rulings. The legislator for Canton Zurich endeavored to counteract this imbalance by creating this office (on the demands for animal welfare lawyers in Austria cf. Plank, 127 onwards and 142 onwards)

History of the animal welfare lawyer in Canton Zurich

This office came about within the framework of the people's initiative in the Canton Zurich "for a right of action and verification in animal welfare" which the three important animal welfare organizations in the canton submitted in 1988. Amongst other things, they thereby demanded the right to take on the legal representation of the animals harmed in criminal proceedings. The cantonal commission set up for preparatory discussion about the people's initiative looked for independent solutions in conjunction with the animal welfare organizations which could equally satisfy the state's and animal welfare concerns. They agreed on the Office of the Lawyer for Animal Welfare in Criminal Matters. This individual should have the same rights as demanded by the initiators for the animal organizations, namely the *position of the injured party in* criminal proceedings and the rights to proceedings associated with this. Through the solution suggested by it, the commission also guaranteed that a lawyer would appear in the proceedings and not some lay person with an interest in animal welfare. It was rightly expected that this individual with precise knowledge of the course of procedure was able to distinguish more promising interventions from less promising or appropriate ones in the criminal procedure. At the same time the question was avoided about who amongst the organizations was entitled to an association appeal against an administrative act in criminal matters.

The counterproposal put forward by the government council, also very progressive in other areas, (authority of vets to participate, indirect right of action by associations against animal welfare authorizations) was accepted as the new cantonal animal welfare law by an overwhelming majority in the referendum dated June 2nd 1991 and put in force together with the cantonal animal welfare regulation dated March 11th 1992 by April 1st 1992. The previous cantonal animal welfare provisions were repealed.

Legal basis

The *legal basis* for the lawyer for animal welfare in criminal matters is now § 17 of the Canton Zurich Animal Welfare Act dated June 2nd 1991:

“ In criminal procedures re violation of provisions in the animal welfare legislation the National Administration and a lawyer appointed by the cantonal government at the suggestion of the animal welfare organizations safeguard the interests of the injured party“ (in detail: Goetschel, 1994, 64–86).

His party rights are further set by the Canton Zurich animal welfare decree dated March 11th 1991 (§ 13 - 15). Thus the cantonal Veterinary Office furnishes him with copies of the criminal information drawn up regarding infringement of provisions in the animal welfare legislation. He has the right to inspect the files there which might be of significance for criminal proceedings (§ 13). The investigating authorities (district lawyers and governors' offices) inform him about the commencement of investigating proceedings in animal welfare criminal cases and invite him to attend the investigation open to the parties. He has the right to inspect the files and is given stop notices, disciplinary penalties and fixed penalty orders. He is invited to attend trials and is given the judgement (§ 14). In addition, he is authorized to inform an animal welfare organization located in the Canton Zurich about the progress and the outcome of the proceedings if commencement of criminal proceedings is due to their information (§ 15).

The rights of the lawyer for animal welfare in criminal matters

His *individual rights* can be divided up as follows: From the very beginning he is involved in all criminal proceedings in the canton given his right to inspect files and his right to be notified about investigations. His *right to participate* gives him the right to be invited to attend all investigations open to the parties. Thus he has the right to follow the interrogation of the person charged, of the witnesses and the experts and to appeal against the final determination or possible stop notice and to do so on criminal points. There follows from his *right to file* for an application his right to request a motion to take evidence and to request that official reports by the district veterinary surgeon or the Federal Office for Veterinary Matters be obtained. He can also request his own expert opinion, in particular if the authority suspects an accumulation of similarly based animal welfare cases. He must be informed unsolicited in full of all decisions *and he can appeal against them*. Appeal under federal law is also open to him.

To date the "animal protection lawyer" has made rather sparing use of his legal remedies. Thus he has not overtaxed his function by challenging mere discretionary decisions regarding sentencing and not become involved without reason in the

room for maneuver of the penal authorities who are dealing with the animal welfare legislation (Goetschel, 1994, 80, with references).

Normally the person convicted must compensate the injured party for the costs and machinations arising from the *proceedings*. The aforementioned animal welfare lawyer also has a claim for compensation even if he is awarded modest recompense based on the time involved from the National Administration.

Legal status Lawyer and civil servant

As regards his position, the Zurich lawyer in animal welfare criminal matters is both a private *lawyer* and a *civil servant*: As a lawyer he is subject to the law for lawyers with the special feature that he has no natural person or legal entity as clients. He is not bound by any instructions, either from the animal owner or the animal welfare associations. He has the exacting duty of carrying out his brief thoroughly, correctly and appropriately according to his own judgement. Just like other lawyers he must inform representatives of the media correctly in substance and cultivate a degree of reticence in unfinished proceedings. He also has the right to appoint deputies if necessary if the work load becomes unreasonably heavy.

He shares public legal functions with civil servants, observes official secrecy and within restricted limits is subject to official secrecy especially about internal administrative matters (Goetschel, 1994, 83-85).

Experience and assessment

In our assessment the office of the animal welfare lawyer has proved extremely successful. It satisfies a genuine need and should be applied like this simply and profitably to other cantons or indeed states instead of or in addition to an association's right of appeal against an administrative act in criminal matters.

The degree to which penal animal welfare provisions have become known has increased, as has the motivation of criminal investigation authorities and courts dealing with animal welfare cases. The criminal procedural device by which somebody takes on the position of the injured party for others could also be possible in the area of environmental criminal law and also in that of child welfare.

The setting up of this office has initiated the creation of ethical animal welfare on an objective and rational level which can be implemented effectively and is convincing in the long term. It is quite common for radical animal protectors to appear unnecessarily aggressive, excessive and not objective, not least because they are excluded from animal welfare proceedings. More circumspect *but no less* determined dispensation of justice in animal welfare cases is simplified with the transfer of genu-

ine responsibility to organized animal welfare. The extensive acceptance of the office, the pressure on court decisions towards uniformity which appears effective, practical perceptions and the institutionalization of the perception of the interests of injured animals by a central representative permit further improvements in animal welfare to be expected.

Structure and development of the office

Unfortunately the office is initially restricted to criminal animal welfare. The incumbent is excluded from administrative proceedings like bans on animal ownership, indeed is not even informed about them, although administrative measures such as these would be of importance in the criminal assessment of an individual cruel to animals. It would be worth examining how the office of an "animal protection lawyer" worthy of the name and with the appropriate *rights* should be elaborated in other countries so as to really help animal welfare law to make a breakthrough. Here more extensive work on animal welfare law and constitutional law is desirable to come to grips with possible doubts, such as the department of public prosecution's monopoly to prosecute, the shift in the balance of power within justice and the undesirable self-monitoring.

VII. Conclusion

Animal cloning shows weaknesses in the present notion of animal welfare which is traditionally directed towards protecting animals against pain, suffering, injury or fear. Legal foundations must be elaborated and structures for legal proceedings created to also give the ethical discussion frequently demanded legally relevant space. According to constitutional law considerations animal welfare laws should be capable of being examined by the courts not just to the detriment but also to the benefit of animals, even if or precisely because laws contain imprecise legal terms like the "dignity of the creature".

VII. Literature

- Ammann, D., Vogel, B. (2000). *Transgene Nutztiere – Landwirtschaft – Gene Farming – Klonen. (Transgenic working animals - Agriculture - Gene Farming - Cloning) SAG.-Studienpapiere, Zürich.*
- Attfeld, R. (1995): *Genetic Engineering: Can Unnatural Kinds be Wronged? In: Wheale, Peter & McNally, Ruth (eds.)*
- Baguisi, A., Behboodi, E., et al., (1999). *Production of goats by somatic cell nuclear transfer. Nature Biotechnology, Vol. 17, May 1999, p. 456 – 461.*
- Balzer, P. and Rippe, K.P. and Schaber, P. (1997): *Was heißt Würde der Kreatur. (What does the dignity of the creature mean ?) Schriftenreihe Umwelt Nr. 294, herausgegeben vom Bundesamt für Umwelt, Wald und Landschaft (BUWAL), Bern*
- Bartels, T. (1995): *“Qualzüchtungen“ beim Geflügel. ("Breeding causing suffering" in poultry) In: Dtsch. tierärztl. Wschr. 102 (1995), Hannover, 117 - 119.*
- Bartels, T. and Wegner, W. (1998): *Fehlentwicklungen in der Haustierzucht, Stuttgart. (Malformations in domestic animal breeding)*
- Barth, K. (1950): *Kirchliche Dogmatik. (Religious dogmatics) 4. Auflage. Zollikon-Zürich 1970, Band III, 1. Teilband, Erstauflage 1950.*
- Berg K. (1997): *Transgene Nutztiere. (Transgenic working animals) In : Sambras, H.H. and Steiger, A. (Hrsg.): Das Buch vom Tierschutz. (The animal welfare book) Ferdinand Enke Verlag Stuttgart, 577-587.*
- Bericht der Ethik-Studienkommission des Eidgenössischen Volkswirtschaftsdepartementes zur Gentechnologie im ausserhumanen Bereich (1995), Bern. (Report by the Ethical Studies Commission of the Swiss National Department on Genetic Engineering in the non-human field)*
- Bickhardt, K. (1997): *Probleme der haltungs- und zuchtbedingten Erkrankungen von Schweinen. (Difficulties with illnesses in pigs caused by keeping and breeding) In: Verwirklichung des Tierschutzes in der "Nutztier"-Haltung - Eine gemeinsame Aufgabe von Landwirtschaft und Tiermedizin, Fachtagung vom 1.-3. (Making animal protection in "working animal" keeping a reality. A task agriculture and veterinary medicine have in common) März 1996 in der Evangelischen Akademie Bad Boll, Protokolldienst 5/97, 57 - 65.*
- Blumenstock, S. (1994): *Die Tierschutzgesetzgebung in den Mitgliedstaaten der Europäischen Gemeinschaft sowie in Österreich, der Schweiz und den skandinavischen Ländern - unter besonderer Berücksichtigung der Bestimmungen zur Nutztierhaltung. (Animal welfare legislation in the Member States of the European Community and in Austria, Switzerland and Scandinavian countries, with particular reference to the provisions on keeping working animals) Vet.-med. Diss., Berlin.*
- Bondolfi, A. and Lesch W. and Pezzoli-Olgiati D. (1997) (Hrsg.): *Würde der Kreatur – Essays zu einem kontroversen Thema. (The dignity of the creature - essays on a controversial subject) Pano-Verlag, Zürich.*
- Brandhuber, K. (1994): *Haben wir die Berechtigung, Tiere zu töten? - Stand der in der Bundesrepublik geltenden Rechtsordnung. (Are we entitled to kill animals? The status of the legal system valid in the Federal Republic) In: Loeffler, K. (Hrsg.): Deutsche Veterinärmedizinische Gesellschaft, Fachgruppe Tierschutzrecht; (German Veterinary Medicine Society (DVG), animal welfare expert group, respect for life) Ehrfurcht vor dem Leben, Gießen, 39-58; erhältlich bei der Deutschen Veterinärmedizinischen Gesellschaft e.V., Frankfurter Straße 89, D-35392 Gießen.*

- Bürki, K. (1997): *Transgene Versuchstiere. (Transgenic experimental animals)* In: Sambras, H.H. and Steiger, A. (Hrsg.): *Das Buch vom Tierschutz. (The animal welfare book)* Ferdinand Enke Verlag Stuttgart, 570-576.
- Campbell, K.H.S., McWhir, J., Ritchie, W.A. & Wilmut, I. (1996). Sheep cloned by nuclear transfer from a cultured cell line. *Nature*, Vol. 380, 7. March 1996, p. 64.
- Caspar, J. (1999): *Tierschutz im Recht der modernen Industriegesellschaft - Eine rechtliche Neukonstruktion auf philosophischer und historischer Grundlage*, Nomos Verlagsgesellschaft, Baden-Baden. (Animal protection in the legislation of a modern industrial society, a new legal structure based on history and philosophy)
- Cibelli, J.B., Stice, S.L., Golueke, P.J. et al.. (1998). Cloned transgenic calves produced from nonquiescent fetal fibroblasts, *Science*, Vo. 280, 22. May, p. 1256.
- Danner, E. (1993): *Diskussionsbeitrag. (Contribution to discussion)* In: Goetschel A.F. (Hrsg.): *Recht und Tierschutz - Hintergründe und Aussichten. (Animal welfare and legislation, the background and the prospects)* Verlag Paul Haupt, Bern/Stuttgart/Wien, 71f.
- Delpire V. and Balls M.: *ECVAM Workshop über die Verwendung transgener Tiere in der EU: Ein Überblick*, in: (ECVAM workshop on the use of transgenic animals in the EU, an overview) *ALTEX* 1/1998 23-26.
- Engels, E.-M. (1999): *Ethische Problemstellungen der Biowissenschaften und Medizin am Beispiel der Xenotransplantation. (Ethical problems in the biosciences and medicine with xenotransplantation as an example)* In: Engels E.-M. (Hrsg.): *Biologie und Ethik*, Philipp Reclam jun. (Biology and Ethics) Stuttgart, 283 – 328.
- Fox, M. (1992): *Transgenic Animals: Ethical and Animal Welfare Concerns*, in Whealle, Peter & McNally, Ruth (eds.)
- Goetschel, A.F. (1986): *Kommentar zum Eidgenössischen Tierschutzgesetz. (Commentary on Swiss animal protection legislation)* Verlag Paul Haupt, Bern/Stuttgart.
- Goetschel, A.F. (1987): *Erlass-Sammlung zum Schweizer Tierschutzrecht. (Collection of decrees re Swiss animal welfare)* Verlag Paul Haupt, Bern/Stuttgart.
- Goetschel, A.F. (1989): *Tierschutz und Grundrechte, dargestellt am Verhältnis zwischen der eidgenössischen Tierschutzgesetzgebung und den Grundrechten der persönlichen Freiheit, der Wissenschaftsfreiheit und der Religionsfreiheit. (Animal welfare and basic rights, shown in the relationship between Swiss animal welfare legislation and the basic rights of personal freedom, scientific freedom and religious freedom)* Verlag Paul Haupt, Bern/Stuttgart.
- Goetschel, A.F. (1993): *Das Schweizer Tierschutzgesetz - Übersicht zu Theorie und Praxis. (Swiss animal protection legislation, an overview of theory and practice)* In: Goetschel A.F. (Hrsg.): *Recht und Tierschutz - Hintergründe und Aussichten. (Animal welfare and legislation, the background and the prospects)* Verlag Paul Haupt, Bern, Stuttgart, Wien, 257-289.
- Goetschel, A.F. (1994): *Der Zürcher Rechtsanwalt in Tierschutzstrafsachen. (The Zurich lawyer in animal welfare criminal matters)* In: *Schweizerische Zeitschrift für Strafrecht*, Verlag Stämpfli + Cie AG, Bern, Band 112, Heft 1, 64-86.
- Goetschel, A.F. (1995): *Zum verfassungsrechtlich geschützten Begriff der Würde der Kreatur. (On the term the dignity of the creature protected in the constitution)* Introduction to: G.Gülcher. *Deutsch: Die "Würde der Kreatur" - Erläuterungen zu einem neuen Verfassungsbegriff am Beispiel des Tieres. (The "dignity of the creature", explanation of a new constitutional term with animals as an example)* Verlag Paul Haupt, Bern/Stuttgart/Wien, V-XII.

- Goetschel, A.F. and Rebsamen-Albisser B. (1996a): Das "Unerläßliche Maß" an Tierversuchen aus juristischer Sicht. (The "absolutely essential degree" of animal experiments from a legal point of view) In: Vereinigung "Ärzte gegen Tierversuche" (Hrsg.): (Association of "Veterinary Surgeons against Animal Experiments") Unerläßlich - Die Bewilligungspraxis für Tierversuche unter der Lupe, Zürich, 17-39. (Obligatory, authorisation practice for animal experiments under the microscope)
- Goetschel, A.F. and Rebsamen-Albisser B. (1996b) Verankerung von Alternativmethoden in der Gesetzgebung und ihre Anwendung im Vollzug, in: (The basis of alternative methods in legislation and their application in enforcement) Gruber, F.P. and Spielmann H. (Hrsg.): Alternativen zu Tierexperimenten - Wissenschaftliche Herausforderung und Perspektiven, Spektrum Akademischer Verlag, Berlin, Heidelberg, Oxford, 1996, 47 - 65. (Alternatives to animal experiments, scientific challenges and perspectives)
- Goetschel, A.F. (1997a): Die (in der Schweiz verfassungsrechtlich geschützte) Würde der Kreatur und deren Beachtung im Tierversuch. (The dignity of the creature (constitutionally protected in Switzerland) and its observance in animal experiments) In: Schöffl, H. Spielmann, H., Tritthart, H.A.: Forschung ohne Tierversuche, Springer Wien, New York, 342-353. (Research without animal experiments)
- Goetschel, A.F. (1997b): Tierschutzrecht im Wandel. (Changes in animal welfare legislation) In: Sambraus, H.H. und Steiger, A. (Hrsg.): Das Buch vom Tierschutz. (The animal welfare book) Ferdinand Enke Verlag Stuttgart, 906-928.
- Goetschel, A.F. (1998): Möglichkeiten sowie ethische Grenzen der Bio- und Gentechnologie bei Tieren - Derzeitige Rechtslage und Handlungsbedarf, in: (Opportunities and ethical limits of biotechnology and gene technology in animals, current legal situation and need for action) Evangelische Akademie Bad Boll (Hrsg.): Gene und Klone - Möglichkeiten sowie ethische Grenzen der Bio- und Gentechnologie bei Tieren, Tagung vom 15.-17. (Genes and clones, opportunities and ethical limits of biotechnology and gene technology in animals) Mai 1998, Protokolldienst 20/98, 164 - 176.
- Goetschel, A.F. (1999): Stellungnahme zum Bericht von Balzer, P. und Rippe, K.P. und Schaber, P. (Comment on report by Balzer, P., Rippe K.P. and Schaber, P.) (1997): Was heißt Würde der Kreatur. (What does the dignity of the creature mean?) Bern und Zürich.
- Hafez, M. and v.d. Emde, J., and Deerberg, F. (1997): Probleme der haltungs- und zuchtbedingten Erkrankungen bei Puten. (Difficulties with diseases in turkeys caused by farming and breeding) In: Verwirklichung des Tierschutzes in der "Nutztier"-Haltung - Eine gemeinsame Aufgabe von Landwirtschaft und Tiermedizin, Fachtagung vom 1.-3. (Making animal welfare in "working animal" ownership a reality. A task agriculture and veterinary medicine have in common) März 1996 in der Evangelischen Akademie Bad Boll, Protokolldienst 5/97, 128 - 140.
- Hirt, H. (1997): Durch Zucht bedingte Haltungsprobleme am Beispiel der Mastputen. (Farming problems caused by breeding with turkeys for fattening as an example) In: Richter T. and Herzog A. (Hrsg.): Tierschutz und Tierzucht, DVG-Tagung der Fachgruppen "Tierschutzrecht und Gerichtliche Veterinärmedizin" und "Tierzucht, Erbpathologie und Haustiergenetik" in Zusammenarbeit mit der Tierärztlichen Vereinigung für Tierschutz, Gießen, 127 - 133. (Animal welfare and animal breeding, DVG meeting of the expert groups "Animal welfare legislation and legal veterinary medicine" and "Animal breeding,

hereditary pathology and domestic animal genetics" in co-operation with the Veterinary Association for Animal Welfare)

- Holland, A. (1990): *The Biotic Community: A Philosophical Critique of Genetic Engineering*, in: Wheale, Peter & McNally Ruth (eds.)
- Holzhey, H. (1993): *Das Tier ist keine Sache - Rechtsethische Postulate zu einer Neubewertung des Tieres. (Animals are not things, legal and ethical assumptions on a re-assessment of animals)* In: Goetschel A.F. (Hrsg.): *Recht und Tierschutz - Hintergründe und Aussichten. (Animal welfare and legislation, the background and the prospects)* Verlag Paul Haupt, Bern/Stuttgart/Wien, 201-212.
- Idel, A. (1998): *Tierversuche und Gentechnik - Die genetische Manipulation von Tieren und ihre rechtliche Ausgestaltung. (Animal experiments and gene technology, genetic manipulation of animals and their legal elaboration)* In: Caspar J. und Koch, H.-J. (Hrsg.): *Tierschutz für Versuchstiere - Ein Widerspruch in sich?, Nomos Verlagsgesellschaft, Baden-Baden, 93 - 116. (Animal welfare for experimental animals, a paradox ?)*
- Idel, A. (1999). *Gentechnische Manipulation und Klonen bei landwirtschaftlich genutzten Tierarten. (Genetic engineering manipulation and cloning in animal species used in agriculture)* Bericht für die Enquête-Kommission Gentechnik des Schleswig-Holsteinischen Landtages.
- Kaletka, E. and Kostka, V. (1997): *Probleme der haltungs- und zuchtbedingten Erkrankungen von Schweinen. (Difficulties with illnesses in hens caused by keeping and breeding)* In: *Verwirklichung des Tierschutzes in der "Nutztier"-Haltung - Eine gemeinsame Aufgabe von Landwirtschaft und Tiermedizin, Fachtagung vom 1.-3. (Making animal protection in "working animal" ownership a reality. A task agriculture and veterinary medicine have in common)* März 1996 in der Evangelischen Akademie Bad Boll, Protokolldienst 5/97, 72 - 105.
- Koehlin, F., and Ammann, D. (1995): *morgen, Materialienband zur Gen-Schutz-Initiative der Schweizerischen Arbeitsgruppe Gentechnologie SAG, Realutopia-Verlagsgenossenschaft Zürich. (Tomorrow, a volume of material on the SAG's gene welfare initiative)*
- Krepper, P. (1998): *Zur Würde der Kreatur in Gentechnik und Recht - Thesen zum gentechnischen Umgang mit Tieren in der Schweiz unter Berücksichtigung des internationalen Rechtsumfelds. (On the dignity of the creature in genetic engineering and law, opinions on genetic engineering handling of animals in Switzerland taking the international legal environment into consideration)* Helbing und Lichtenhahn, Basel und Frankfurt a.M.
- Lehmann, M. (1995): *Das Behördenbeschwerderecht des Schweizerischen Bundesamtes für Veterinärwesen. (The Swiss Federal Office for Veterinary Matters' administrative right of appeal against an administrative act)* In: Schöffli, H., Spielmann, H., Tritthart, H.A., Cussler, K., Furhmann, U., Goetschel, A.F., Gruber, F.P., Heusser, C., Möller, H., Ronneberger, H., Vedani, A. (Hrsg.): *Forschung ohne Tierversuche 1995. (Research without animal experiments)* Springer-Verlag, Wien/New York, 264-267.
- Leuthold, M. (1995): *Das Beschwerderecht innerhalb der Tierversuchskommission im Kanton Zürich. (The right of appeal against an administrative act within the animal experiment commission in Canton Zurich)* In: Schöffli, H., Spielmann, H., Tritthart, H.A., Cussler, K., Furhmann, U., Goetschel, A.F., Gruber, F.P., Heusser, C., Möller, H., Ronneberger, H., Vedani, A. (Hrsg.): *Forschung ohne Tierversuche 1995. (Research without animal experiments)* Springer-Verlag, Wien/New York, 254-256.

- Martin, M. (1998): *Instrumente zur effizienteren Durchsetzung des Tierschutzgesetzes, in: (Instruments for more effective implementation of animal welfare legislation) Landesbeauftragte für Tierschutz in Hessen (Hrsg.): (Individuals entrusted with animal welfare in Hessen) Rechtsschutz für Tiere - Tagung des Hessischen Ministeriums der Justiz und für Europaangelegenheiten in Zusammenarbeit mit der Landesbeauftragten für Tierschutz in Hessen vom 29. (Legal welfare for animals, meeting of the Hessen Ministry for Justice and for European Affairs in conjunction with the individuals entrusted with animal welfare in Hessen) September bis 3. Oktober 1997 in der Deutschen Richterakademie Trier, 223 - 226.*
- Mossmann H. (1998): *Tierschutzaspekte bei transgenen Tieren. (Aspects of animal welfare in transgenic animals) In: Evangelische Akademie Bad Boll (Hrsg.): Gene und Klone - Möglichkeiten sowie ethische Grenzen der Bio- und Gentechnologie bei Tieren, Tagung vom 15.-17. (Genes and cloning, opportunities and ethical limits of biotechnology and genetic engineering in animals) Mai 1998, Protokolldienst 20/98, 67- 73.*
- Oester, H., Fröhlich, E., Hirt, H. (1997): *Wirtschaftsgeflügel. (Commercial poultry) In: Sambraus, H.H. and Steiger, A. (Hrsg.): Das Buch vom Tierschutz. (The animal welfare book) Ferdinand Enke Verlag Stuttgart, 186 - 214.*
- Ozil, J.P. (1993). *Production of identical twins by bisection of blastocysts in the cow. Journal of Reproduction and Fertility, Vol. 69, S. 463 – 468.*
- Pinkert, C.A. & Murray, J.D. (1999). *Transgenic farm animaly. In: Murry, J.D., Anderson, G.B., Obergauer, A.M., & McGloughlin, M.M. (eds.), Transgenic animals in agriculture. CAB International, S. 6.*
- Plank, F.-J. (1994): *Zum Entwurf eines Bundesgesetzes zum Schutz der Tiere. (On drafting a federal law for the welfare of animals) In: Harrer F. and Graf G.(Hrsg.): Tierschutz und Recht, Verlag Orac, Wien, 117-145.(Animal welfare and legislation)*
- Praetorius, I., and Saladin, P. (1996): *Die Würde der Kreatur. (The dignity of the creature) Schriftenreihe des Bundesamtes für Umwelt, Wald und Landschaft, Bern.*
- Renard, J.-P., Chastant, S., Chesné, P., Richard, C., et al. (1999). *Lymphoid hypoplasia and somatic cloning. The Lancet, Vol. 353, Nr. 9163, 1. May, p. 1489 – 1491.*
- Rolston, H. *III-5 Environmental Ethics, Philadelphia: Temple University Press.*
- Rowan Andrew N. / Loew Franklin M. (1995): *The Animal Research Controversy: Protest, Process & Public Policy – an Analysis of Strategic Issues, USA (ohne Erscheinungsort).*
- Rusche, B. (1996): *Zucht und Qualzucht in der Nutztierhaltung, in: (Breeding and cruel breeding in working animals) Der kritische Agrarbericht 96, 271-276.*
- Saegusa, A. (1998). *Japan studies elevated cloning death. Nature Biotechnology, Vol. 16, November 1998, p. 992.*
- Saladin, P. (1993): *Wahrnehmung des Tierschutzes im Verwaltungsverfahren. (Perception of animal welfare in administrative proceedings) In: Goetschel A.F. (Hrsg.): Recht und Tierschutz - Hintergründe und Aussichten. (Animal welfare and legislation, the background and the prospects) Verlag Paul Haupt, Bern/Stuttgart/Wien, 37 - 62.*
- Saladin, P., and Schweizer, R.J. (1995): *Kommentar zur Bundesverfassung der Schweizerischen Eidgenossenschaft, Art. (Commentary on the federal constitution of Switzerland) 24^{novies} paragraph 3, Verlage Helbing & Lichtenhahn, Schulthess Polygraphischer Verlag, Stämpfli & Cie. AG, Basel, Zürich, Bern.*
- Scharmann, W. and Teutsch, G.M. (1994): *Zur ethischen Abwägung von Tierversuchen, in: (On ethical assessment of animal experiments) ALTEX, Alternativen*

- zu Tierexperimenten, 11, 4/94, Spektrum Akademischer Verlag, Heidelberg, Oxford, Berlin, 191 - 198.
- Schweitzer, A. (1990): Die Ethik der Ehrfurcht vor dem Leben. (The ethics of respect for life) In: Kultur und Ethik. (Culture and ethics) C.H. Beck-Verlag, München, Nachdruck, 328 - 353.
- Schweizerische Akademie der Medizinischen Wissenschaften und Schweizerische Akademie der Naturwissenschaften: Ethische Grundsätze und Richtlinien für wissenschaftliche Tierversuche vom 7. (Basic ethics and guidelines for scientific animal experiments) 7. Mai 1994/24. Februar 1995, 2. A., August 1995; zu beziehen bei der SAMW, Petersplatz 13, 4051 Basel, abgekürzt mit EGR.
- Shiels, P.G., Kind, A.J., Campbell, T.G. & Steele, N.C., (1999). Analysis of telomere lengths in cloned sheep. *Nature*, Vol. 399, 29. May, p. 316 – 317.
- Sidhom P.M., (1995). Eine statistische Untersuchung der gerichtlichen Sanktionspraxis tierschutzrelevanter Straftaten anhand des Datenmaterials der Strafverfolgungsstatistik der Jahre 1980 bis 1991 in der Bundesrepublik Deutschland, Hannover. (A statistical investigation of the courts' sanction practice in criminal acts relating to animal welfare based on the prosecution statistics data between 1980 and 1991 in the German Federal Republic)
- Sitter-Liver, B. (1990): Gerechtigkeit für Mensch und Tier. (Justice for man and animals) In: Ch. A. Reinhardt (Hrsg.): Sind Tierversuche vertretbar? (Can animal experiments be justified?) Beiträge zum Verantwortungsbewußtsein in den biomedizinischen Wissenschaften. (Articles on the sense of responsibility in the biomedical sciences) Zürcher Hochschulforum, Band 16, Verlag der Fachvereine Zürich, 178 - 184.
- Sitter-Liver, B. (1996): Dignitas universalis. Versuch von der Würde auch nichtmenschlicher Wesen zu sprechen, in: (An attempt to talk about dignity in non-human creatures) Ethik in der Schweiz, hg. (Ethics in Switzerland) V. H. Holzhey, Zürich, S. 135 – 152.
- Sitter-Liver, B. (1999). „Würde der Kreatur“ – Eine Metapher als Ausdruck erkannter Verpflichtung. ("The dignity of the creature", a metaphor as an expression of an obligation recognised) In: Baumgartner, H.M. et al. (Hrsg.), Philosophisches Jahrbuch, Freiburg/München, S. 465 – 478.
- Sommer, H. (1997): Leistungsgrenzen bei Rind, Schwein und Pferd. (Performance limits in cattle, pigs and horses) In: Richter T. and Herzog A. (Hrsg.): Tierschutz und Tierzucht, DVG-Tagung der Fachgruppen "Tierschutzrecht und Gerichtliche Veterinärmedizin" und "Tierzucht, Erbpathologie und Haustiergenetik" in Zusammenarbeit mit der Tierärztlichen Vereinigung für Tierschutz, Gießen, 79 - 96. (Animal welfare and animal breeding, DVG meeting of the expert groups "Animal welfare legislation and legal veterinary medicine" and "Animal breeding, hereditary pathology and domestic animal genetics" in conjunction with the Veterinary Surgeons' Association for Animal Welfare, Gießen)
- Teutsch, G.M. (1987): Mensch und Tier - Lexikon der Tierschutzethik. (Animals and man, a dictionary of animal welfare ethics) Vandenhoeck & Rupprecht, Göttingen.
- Teutsch, G.M. (1995): Die "Würde der Kreatur".(The "dignity of the creature") Erläuterungen zu einem neuen Verfassungsbegriff am Beispiel des Tieres, mit einer Einführung von Goetschel A. (Explanations of a new constitutional term using animals as an example with an introduction by Goetschel A. F.), Verlag Paul Haupt, Bern/Stuttgart/Wien.

- Trachsel, B. (1996a): Kritische Anmerkungen zur Herstellung von genmanipulierten Tieren. (Critical comments on the production of genetically manipulated animals) In: *Swiss Vet* 13 (1996), Nr. 7-8, 13-16.
- Trachsel, B. (1996b): Transgene Tiere: (Transgenic animals) Tierverschleiss. (Animal wastage) In: *Du und die Natur*, 4/1996, Basel, 4-9.
- Vesting, J. und Simon, J. (1998): Die Zulässigkeit des Klonens von Tieren in Deutschland, *ZRP*, 1998, 261-264. (The permissibility of cloning animals in Germany)
- Voetz, N. (1998): Möglichkeiten sowie ethische Grenzen der Bio- und Gentechnologie bei Tieren - Europäische Aspekte. (Opportunities and ethical limits in biotechnology and genetic engineering in animals, European angles) In: *Evangelische Akademie Bad Boll (Hrsg.): Gene und Klone - Möglichkeiten sowie ethische Grenzen der Bio- und Gentechnologie bei Tieren, Tagung vom 15.-17. (Genes and clones, opportunities and ethical limits of biotechnology and genetic engineering in animals) Mai 1998, Protokolldienst 20/98, 181 - 189*
- Wall, R.J., Rexroad, C.E., Powell, A., Shamay, A., KcKnight, R. & Hennighausen, L. (1996). Synthesis and secretion of the mouse acidic protein in transgenic sheep. *Transgenic Research*, Vol. 5, p. 67 – 72.
- Wegner, W. (1997): Tierschutzaspekte in der Tierzucht. (Aspects of animal welfare in animal breeding) In: *Sambras, H.H. und Steiger, A. (Hrsg.): Das Buch vom Tierschutz. (The animal welfare book) Ferdinand Enke Verlag Stuttgart, 556 -569.*
- Willadsen, S.M. (1981) The development capacity of blastomeres from 4- and 8-cell sheep embryos. *J. Embryol. Esp. Morph.*, Vol. 65, p. 165 – 172.
- Wilmut, I., Schnieke, A.E., McWhir, J., Kind, A.J. & Campbell, K.H.S. (1997). Viable offspring derived from fetal and adult mammalian cells. *Nature*, Vo. 385, 27. Februar 1997, p. 810.
- Wilmut, I. (1999). Klonen für medizinische Zwecke. (Cloning for medical purposes) *Spektrum der Wissenschaft* 4, April 1999, S. 34.
- Winter, G. (1993): Grundprobleme des Gentechnikrechts, *Umweltrechtliche Studien Bd. (Basic problems in genetic engineering legislation, environmental studies vol.)* 14. Düsseldorf.
- Wirth, P., Goetschel, A.F. (1989): *Juristischer Argumentationskatalog zur Eigenössischen Tierschutzinitiative*, Basel. (A legal catalogue of reasoning on the Swiss animal welfare initiative, Basel)
- E.. (1995): Definition, Etablierung und Bewertung transgener Tiermodelle. (Defining, setting up and assessing transgenic animal models) In: *Hammer, C., and Meyer, J. (Hrsg.): Tierversuche im Dienste der Medizin. (Animal experiments in the service of medicine) Pabst, Lengerich, 106 - 135.*
- Wolf, E., Zakhartchenko, V. & Brem, G. (1998). Nuclear transfer in mammals: recent development and future perspectives. *Journal of Biotchnology*, Vol. 65, S. 99 – 110.
- Zenger, Ch.A. (1989): Das "unerläßliche Maß" an Tierversuchen - Ergebnisse und Grenzen der juristischen Interpretation eines "unbestimmten Rechtsbegriffs". (The "absolutely essential degree" of animal experiments, results and limits of the legal interpretation of an "imprecise legal term") Beihefte zur Zeitschrift für *Schweizerisches Recht*, Heft 8, Verlag Helbing & Lichtenhahn, Basel.

CH-Zurich, September 14, 2001-09-04

* * * * *