CONSIDERING ANIMALS

Moral convictions concerning animals and judgement on the culling of healthy animals in animal disease epidemics

Nina Eva Cohen

Thesis committee

Thesis supervisor

Prof.dr. E.N. Stassen
Professor of Animals and Society
Wageningen University

Thesis co-supervisors

Prof.dr. F.W.A. Brom
Professor of Ethics of Technology Assessment
Utrecht University

Prof.dr. J.A. Stegeman
Professor of Farm Animal Welfare
Utrecht University

Other members

Prof.dr.ir. R.B.M. Huirne
Wageningen University

Prof.dr. Tj. de Cock Buning
VU University, Amsterdam

Dr. J.A.A. Swart
University of Groningen

Prof.dr. J. de Tavernier
University of Leuven, Belgium

This research was conducted under the auspices of the Graduate School of Wageningen Institute of Animal Sciences (WIAS)

CONSIDERING ANIMALS

Moral convictions concerning animals and judgement on the culling of healthy animals in animal disease epidemics

Nina Eva Cohen

Thesis
submitted in fulfilment of the requirements for the degree of doctor
at Wageningen University
by the authority of the Rector Magnificus
Prof. dr. M.J. Kropff
in the presence of the
Thesis Committee appointed by the Academic Board
to be defended in public
on Wednesday 17 November 2010
at 4 p.m. in the Aula

Nina Eva Cohen
Considering animals. Moral convictions concerning animals and judgement on the culling of healthy animals in animal disease epidemics.
Met het oog op dieren. Morele overtuigingen over dieren en oordeelsvorming over het ruimen van gezonde dieren in dierziekte epidemieën.

Thesis Wageningen University, Wageningen, the Netherlands 2010
With references and summaries in English and Dutch

ISBN 978-90-8585-795-2

TABLE OF CONTENTS

Introduction

1

Introduction

Prevention and control of contagious diseases, such as classical swine fever, foot and mouth disease and highly pathogenic avian influenza, is included into the Common Agricultural Policy (CAP) in the European Union. In the context of liberal trade policy, agreements concerning free traffic had become imperative for international trade in animals and animal products. In 1992 this resulted in an enforcement of stringent regulations for a number of animal diseases.

In 1992 the European Union adopted a non-vaccination policy for a number of infectious animal diseases. This entailed no longer vaccinating animals against these diseases. In case of an outbreak, the control strategy was a standstill (movement restrictions) and breeding restrictions, followed by a stamping-out of the epidemic, which is the culling of all infected and healthy but susceptible animals within a radius of 1 to 3 km from the source(s) of the infection. This policy was considered to have two advantages over preventive vaccination. First, a non-vaccination policy was believed to stimulate free market trade of animal and animal products between countries who adopted this policy. Second, calculations indicated that the costs of preventive vaccination would be higher than the costs involved in controlling an epidemic by stamping out the disease. (Berentsen 1991, Koninklijke Nederlandse Akademie van Wetenschappen 2002). Accordingly, during each of the recent epidemics in Europe animals were not protected by vaccination, and millions of infected as well as healthy animals were culled in an effort to eradicate the diseases (Mepham 2004 Woods 2004). The financial setback for the individual animal keepers was outweighed by the benefit to the trade position of a country as a whole.

This policy was based on knowledge from the early nineties. However, since then, substantial changes have taken place. Agricultural production systems have developed considerably. In The Netherlands this has led to scale enlargement, intensive contact structures over often great distances, and an intensifying of the livestock sector. At the same time, the rural area was changing with an increasing number of livestock animals kept for non-commercial purposes. Poultry, cattle, goats and sheep normally kept for the production of food, were now also kept for company, breeding of special breeds, sport, recreation and therapeutic purposes. As a consequence the spectrum of stakeholders has broadened. Furthermore, more knowledge is available about the diseases and their spreading, about the efficiency of the control policy and about the financial setback after the epidemic, which proved to be larger and more complicated than expected.

To distinguish between infected animals and healthy, vaccinated animals, marker vaccines have since been developed. Additionally, the last century has seen a major change in attitude towards animals. Where people once regarded animals from a purely instrumental point of view, now a shift has taken place towards a more protective and respectful attitude. This has resulted in changing views on the proper

treatment of animals during their life, and on acceptable reasons to kill them. Rollin (2007) argues that technological developments, especially the intensification of the livestock sector and animal experimentation, have led to social concern about the treatment of animals. These views he calls the new social ethics.

Animal disease epidemics

From 1997 on, the European Union faced major outbreaks of foot and mouth disease, highly pathogenic avian influenza (bird flu) and classical swine fever. In the Netherlands there were .outbreaks of classical swine fever in 1997-98, foot and mouth disease in 2001 and highly pathogenic avian influenza in 2003. The United Kingdom suffered a major foot and mouth disease epidemic in 2001, and Italy was confronted with highly pathogenic avian influenza epidemics in 1997-98 and again in 2000. In 2006 classical swine fever was reported in Germany and highly pathogenic avian influenza was identified in several member states. The control policy was in line with the then current EU non-vaccination policy. Therefore, the animals had not been protected by vaccination and in Europe about 50 million infected and healthy animals were culled in the stamping-out strategy. (www.oie.int retrieved November 2007). A large number of reports described these epidemics and the issues involved (Curry 2002)

Social and psychological issues

The epidemics left a deep impression on those involved; livestock farmers, veterinarians, non-commercial animal keepers and many others, and even on society as a whole. A number of studies in The Netherlands (Van der Berg 2000 Huirne and Mourits 2002 Van Velzen and Dekker 2003 Welboren et al. 2003 Van Haaften and Kersten 2002, in the United Kingdom and in the OIE (Cumbria Foot and Mouth Disease Inquiry Panel 2002 Institute for Health Research OIE 2003) have addressed these issues. The on-farm culling of healthy animals on a large scale, the animal welfare problems, the lack of autonomy on one's own farm, the severe restrictions on people and animal movement, and the burning pyres in the UK caused major psychological problems.

Not only animal keepers, but also veterinarians were involved in the culling. Although the culling was a means to stop the disease from spreading, thus preventing other animals from catching the disease, it still weighed heavily on the latter. They felt the burden of having to cull perfectly healthy animals, which ran contrary to their professional calling to protect and heal animals, for the sake of the animals as well as for the keepers.

Animal welfare

During the epidemics, the Farm Animal Welfare Council in its report to the British authorities (Farm Animal Welfare Council 2002), the Royal Society for the

Prevention of Cruelty to Animals (Laurence 2002) and the Dutch Society for the Protection of Animals (Van den Berg 2002 Nederlandse Vereniging tot Bescherming van Dieren 2004) monitored the animal welfare situation. It was clear that no one was equipped to deal with so many animals to be culled within a very short time, in conditions that were far from ideal. Moreover, handling and culling were sometimes in the hands of unskilled people not accustomed to working under these circumstances. As a result, a number of animal welfare problems occurred, due to the handling, killing, stunning and transport of the animals. Furthermore, movement restrictions led to the death of healthy animals due to overcrowding, causing physical problems in rapidly growing poultry, and aggression and cannibalism in pigs (Crispin 2002). In the Netherlands, due to movement restrictions, about one million healthy piglets and chickens were culled to prevent further animal welfare problems as a result of overcrowding.

Culling of healthy animals as a moral problem

In the debate about the acceptability of the non-vaccination policy and culling there was controversy between animal keepers. Some agreed that culling was the best way to restore international trade. Others resisted, because they failed to understand why healthy animals were culled, while a vaccine was at hand. Non-commercial animal keepers and zoo keepers protested, because in the control policy no distinction was made between production animals and other animals, even though the latter were not kept for food or export (Velzen and Dekker 2003). The resistance was not restricted to those directly involved; it had resulted in nationwide protests, based on the view that the lives of these animals should be respected for their own sake, and should not be sacrificed for economic purposes. However, production animals are killed by definition, to provide society with food. So how then, can the resistance be understood? For a majority in Dutch society, killing production animals for food is considered acceptable (Rutgers et al 2003). Culling healthy animals, however, was not, because the animals were subsequently destroyed without having fulfilled their natural function, which is the production of food for society. This showed that killing animals is morally justified in the one situation, and not in the other.

People's moral convictions concerning how one ought to treat animals are changing (Rollin 2007 Franklin 2006 Armstrong and Boltzer 2003). Animals are no longer merely valued for their economic merits. They are now equally valued as living beings with a value of their own, as a companion to people, and as a member of a human community. These changing values require a rethinking of people's moral responsibilities towards them.

Expert committees in the United Kingdom (Anderson 2002 the Royal Society 2002), and in the Netherlands (Raad voor het Landelijk Gebied and Raad voor Dieraangelegenheden 2003, 2004) have issued technical advice on future policy,

including risk assessment and preventive measures, vaccination, contingency planning, communication and animal welfare. However, it is acknowledged that in order to be acceptable in present day society, new policy needs a moral perspective which reflects changing moral convictions. In the Netherlands, discussion is underway of a revision of the current prevention and control policy, which gives due consideration to the diversity of moral convictions. To this purpose, more should be known about the diversity of moral convictions in Dutch society.

Objective of the study

The objective of the current study was to contribute to new prevention and control policy for notifiable animal diseases, which would be morally justifiable in society, by gaining a greater understanding of people's moral convictions concerning animals in Dutch society. Also, the role of these convictions in judgement on the culling of healthy animals is described.

Outline of the thesis

The study was performed in four steps.
In a first step, more insight was obtained into moral issues concerning the epidemics, and into priorities for the future that need to be addressed in new policy. For this purpose, a European survey (chapter two), a study among keepers of backyard animals in the Netherlands (chapter three) and a literature study were conducted.
In a second step (chapter four), a model was developed for use in further empirical research on moral convictions in Dutch society.
In a third step, a survey was carried out among the Dutch general public (chapter five), and a stakeholder survey was carried out among Dutch livestock keepers and veterinarians (chapter six).
In a fourth step, a control policy based on risk-of-harm principle and its relevance for backyard animal keepers is discussed (chapter seven). In chapter eight a concept of three-layered moral convictions and their dynamics, and a three-layered concept of normative policy is discussed. The four steps are described below.
In chapter two, the EU survey is presented. The aim was to gain more insight into and differences between the EU member states with respect to their views on moral issues concerning animal disease, prevention and control policy, and priorities for future policy. In 24 member states relevant stakeholders were approached, such as chief veterinary officers, farmers' organisations, veterinary organisations and NGOs. The study focussed on whether the Netherlands differed from other EU member states in this respect.

In chapter three, a quantitative and qualitative study among keepers of backyard animals is described. The aim was to gain more insight into the nature of this practice and to identify the moral vocabulary used by these animal keepers to express one's resistance, and the moral issues that were important to them. It is an emerging non-commercial animal practice which, given its nature, interests and human-animal relationships, is distinct from the livestock sector. This group was an important actor, prominent in the resistance against the culling. In this chapter their nature, their relationship with animals, and their priorities for future policy were described.

In chapter four, a model is discussed. The aim was to develop a model that, in the form of a questionnaire, can be used in empirical research to identify the diversity of moral convictions and the moral values that lie at their base, and to determine their role in judgement. The model formed the base of both the national survey and the stakeholder survey among veterinarians and livestock farmers. Its theoretical framework is based on the results of the EU and backyard animal surveys, on criteria from animal ethics theories about the moral importance of animals (Warren 1997) and on other studies about the moral issues during the epidemics (for references see the introduction of this chapter)

In chapter five, the results are described of the national survey among a random group of people in Dutch society. The aim was to identify the diversity of moral convictions concerning animals and judgement on the culling of healthy animals in Dutch society.

In chapter six, the stakeholder survey among veterinarians and livestock keepers is presented. These two groups were important actors, closely involved in the epidemics and in the debate on the culling. Their practices are different in nature, which may influence their moral convictions and judgement. The aim was to identify the diversity of and possible differences between moral convictions concerning animals and judgement of livestock keepers and veterinarians.

In chapter seven, a risk-of-harm approach of animal disease policy is discussed. The aim is to contribute to new policy with a moral statement. Included in the discussion is what policy based on this principle means for the backyard animal practice

In chapter eight, the results of all surveys are discussed. The aim is to lend a moral perspective to scenarios for future prevention and control policy. This is discussed at four levels: the European, the national, and the stakeholder level, and at the level of animal disease outbreaks. On the grounds of the results of the surveys, the diversity of moral convictions and their dynamics in judgement of individuals and stakeholder groups are reviewed. In a theoretical discussion, a three-layered concept of moral convictions and judgement is proposed. Next, the dynamics of change in the public morality are discussed. Lastly, a three-layered concept for normative policy is proposed. A schematic representation of the chapters of the thesis is presented in figure one.

Note: In the course of writing the chapters some terms originally used in chapter four were changed. The term *fundamental moral attitude* FMA was changed into *moral convictions, element* was changed into *domain, dimension* was changed into *statement* and *arguments* in support of a statement was changed into *moral values* in support of a statement. In discussing the results of the surveys, the term *rating* refers to the *numerical valuation* of moral convictions/moral values and the *numerical valuation* of arguments for judgement. *Value* is used for the appreciation of one's values.

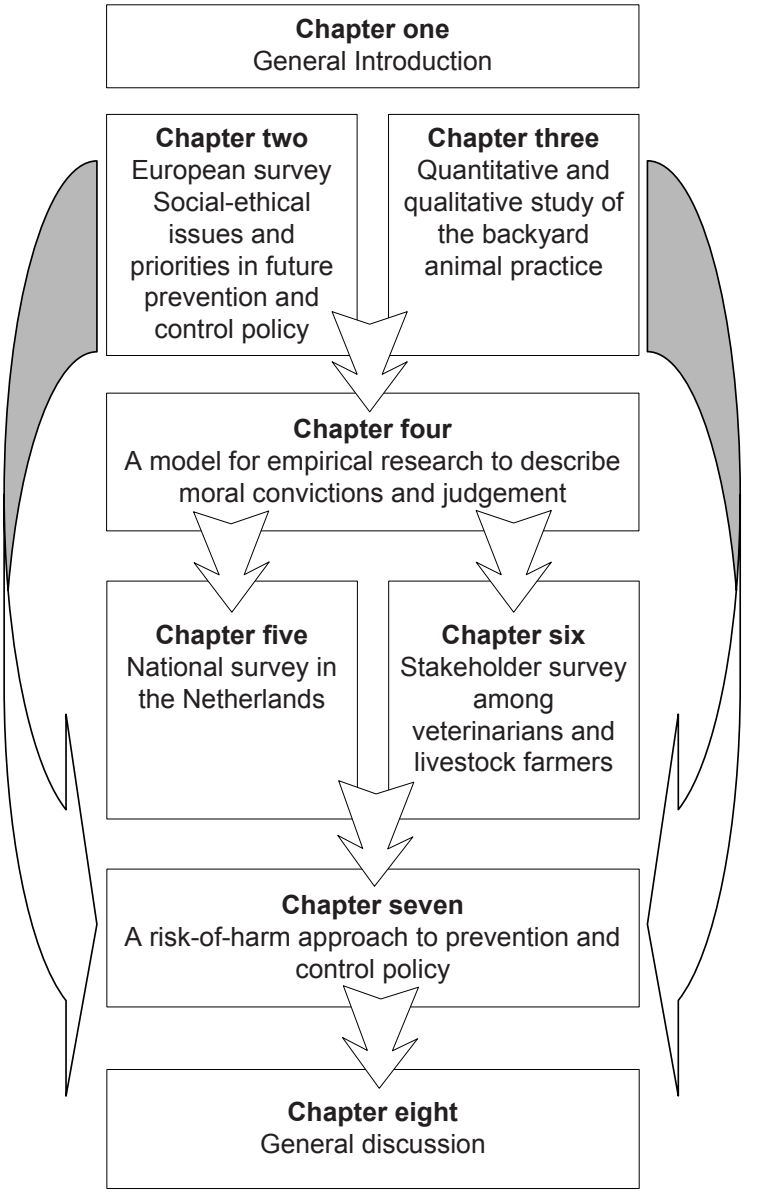

Figure one: Schematic representation of the outline of the thesis

References

Anderson I 22 July 2002 Foot and mouth disease: Lessons to be learned inquiry report HC888, London, The Stationary Office.

Anderson E 2004. Animal rights and the values of nonhuman life. In CR Sunstein, & MC.Nussbaum (Eds) Animal rights, current debates and new directions. US Oxford
University Press 277-299

Anthony R 2004 Risk communication, value judgments, and the public-policy maker relationship in a climate of public sensitivity toward animals: revisiting Britain's foot and mouth crisis. Journal of Agricultural and Environmental Ethics 17(4-5) 363-383

Armstrong SJ & Botzler R.G 2003 General introduction on animal ethics, The Animal Ethics Reader, Routledge, 1-10

Berentsen PBM, AA Dijkhuizen, AJ Oskam 1991 A dynamic model for cost-benefit analyses of foot-and-mouth disease control strategies, Preventive Veterinary Medicine, 12 Issues 12-13, 229-243

Bekoff M 2007 The emotional lives of animals, New World Library, Novaro, California.

Bentham J 1789 Duty to minimize suffering. In P.A.B. Clark & A. Linzey (Eds). Political theory and animal rights. London, Pluto 135-137

Berg B van der 2002 Evaluatie van het welzijn van dieren tijdens de mond- en klauwzeercrisis in Nederland in 2001, report Nederlandse Vereniging tot Bescherming van Dieren, Den Haag.

Crispin SM, PA Roger, H O'Hare, and SH Binns 2002 The 2001 foot and mouth disease epidemic in the United Kingdom: animal welfare perspectives, Scientific and Technological Review of the Office International de Epizootie 21 (3) 877-883.

Cumbria FMD Inquiry Panel, August 2002 Cumbria foot and mouth disease inquiry report, accessed at www.cumbria.gov.uk on June 2004.

Curry D, H Browning, P Davis, I Ferguson, D Hutton, D Julius, F Reynolds, M Tinsley, D Varney and G Wynne, January 2002 Report of the Policy Commission on the future of Farming and Food, Farming and Food, a sustainable future, accessed at www.cabinet-office.gov.uk/farming on June 2004

DEFRA's foot and mouth disease contingency plan, accessed at www.defra.gov.uk on June 2004.

Degrazia D 1999 Animal ethics around the turn of the twenty-first century. Journal of Agricultural and Environmental Ethics, 11, 11-129

European Commission, Directorate-General for Research, Life Sciences, Genomics and Biotechnology for Health, Community research 2003 Development of prevention and control strategies to address animal health and related problems in densely populated livestock areas of the community, FAIR5-CT97-3566, EUR 20576, Brussels.

Farm Animal Welfare Council January 2002 Foot and mouth disease 2001 and animal welfare: lessons for the future. Report of the FAWC, London

Franklin JH 2006 Animal rights and moral philosophy. Columbia University Press, 31-52

Farm Animal Welfare Council, January 2002 Foot and mouth disease 2001 and animal welfare: lessons for the future, report of the FAWC, London.

Follett B July 2002 Infectious diseases in livestock, report of The Royal Society.

Haaften EH van, PH Kersten 2002 Veerkracht, report of Alterra no. 539, Alterra, Wageningen.

Huirne RBM, M Mourits, F Tomassen, JJ de Vlieger, TA Vogelzang 2002 MKZ Verleden, heden en toekomst, Over de preventie en bestrijding van MKZ, report LEI, Den Haag.

Hursthouse R 1999 On virtue ethics. Oxford, Oxford University Press

Institute for Health Research April 2002 Evidence submitted to Cumbria foot and mouth disease inquiry, report Lancaster University

Knight S, I Barnett 2008 Justifying attitudes towards animal use: a qualitative study of people's views and beliefs. Anthrozoös 21(1), 31-42

Koninklijke Nederlandse Akademie van Wetenschappen January 2002 Bestrijding van mond- en klauwzeer, 'stamping out' of gebruik maken van wetenschappelijk onderzoek, report Koninklijke Nederlandse Akademie van Wetenschappen

Laurence CJ 2002 Animal welfare consequences in England and Wales of the 2001 epidemic of foot and mouth disease, Scientific and Technological Review of the Office International de Epizootie 21 (3) 863-868

Macnaghten P 2001 Animal futures, public attitudes and sensibilities towards animals and biotechnology in contemporary Britain. Institute for Environment, Philosophy and Public Policy for the Agricultural and Environmental Biotechnology Commission.
Macnaghten P 2004 Animals in their nature, a case study on public attitudes to animals, genetic modification and 'nature'. Sociology, (38)3, 533-551
Matthews S Herzog HA 1997 Personality and attitudes towards the treatment of animals. Society & Animals 5(2), 169-175(7)
McMahan J 2002 The ethics of killing. Problems at the margins of life. New York: Oxford University Press
Mepham B 2000 "Würde der Kreatur" and the common morality. Journal of Agricultural and Environmental Ethics 13, 65-78
Mepham B 2001 Foot and mouth disease and British agriculture: ethics in a crisis. Journal of Agricultural and Environmental Ethics 14(3) 339-347
Mepham, B 2004. Farm animal diseases in context. Journal of Agricultural and Environmental Ethics 17(4-5) 331-340
Murphy-Lawless J 2004 The impact of BSE and FMD on ethics and democratic process. Journal of Agricultural and Environmental Ethics 17(4-5) 385-403
Nederlandse Vereniging tot Bescherming van Dieren 2004 Reactie van de Dierenbescherming op de evaluatie van de vogelpestcrisis 2003 n.a.v. het rapport van het Bureau Berenschot en de reactie van het kabinet. Report, The Hague, The Netherlands
Noordhuizen-Stassen EN, LJE Rutgers, JM Swabe 2003 Het doden van gehouden dieren, report Utrecht University
Office International des Epizooties February 2003 Abstracts *Conference on Animal Welfare,* accessed at www.oie.int on June 2004
Posner RA 2004 Animal rights: legal, philosophical, and pragmatic perspectives. In CR Sunstein & MC Nussbaum (Eds), Animal rights, current debates and new directions US 51-78 Oxford University Press
Raad voor het Landelijk Gebied and Raad voor Dieraangelegenheden January 2004 Dierziekte-beleid met draagvlak, advies over de bestrijding van zeer besmettelijke dierziekten, deel 2 Onderbouwing van het advies, report RLG 03/8 RDA 2004/01.
Raad voor het Landelijk Gebied and Raad voor Dieraangelegenheden December 2003 Dierziektebeleid met draagvlak, advies over de bestrijding van zeer besmettelijke dierziekten, deel 1 Advies, report RLG 03/8 RDA 2003/08
Regan T 1983 The case for animal rights, Berkeley and Los Angeles: University of California Press.
Rollin BE 2007 Cultural variation, animal welfare and telos, Animal Welfare 16, 129-133
Rossides RC 2002 A farming perspective on the 2001 foot and mouth disease epidemic in the United Kingdom Scientific and Technological Review of the Office International de Epizootie 21 (3) 831-838
Rutgers LJE JM Swabe, EN Noordhuizen-Stassen 2003 Het doden van gehouden dieren Utrecht, Utrecht University
Scruton R 2000 Animal rights and wrongs, London: Demos, third edition
Scudamore J, June 2004 The 2001 FMD outbreak in Great Britain, SVJ, accessed at www.defra.gov.uk on June 2004
Scudamore J, DM Harris, (2002), Control of foot and mouth disease: lessons from the experience of the outbreak in Great Britain in 2001, Scientific and Technological Review of the Office International de Epizootie 21 (3) 699-710
Scudamore JM, DG Pritchard, GM Whitmore 2002 Comments on the paper: Animal welfare consequences in England and Wales of the 2001 epidemic of foot and mouth disease Scientific and Technological Review of the Office International de Epizootie 21 (3) 869-876
Scudamore J GM Trevelyan, MV Tas, EM Varley, GAW Hickman 2002 Carcass disposal: lessons from Great Britain following the foot and mouth disease outbreaks of 2001, Scientific and Technological Review of the Office International de Epizootie
Serpell JA 2004 Factors influencing human attitudes to animals and their welfare. Animal Welfare (13) S145-1551
Singer P 1995 Practical ethics, Cambridge University Press, second edition

State Veterinary Journal 2002 Foot and mouth disease special. Volume 12 (1) edition PB6573, State Veterinary Journal

Taylor P 1986 Respect for nature, a theory of environmental ethics, Princeton, New Jersey: Princeton University Press

Velzen K van, I Dekker July 2003 Niet ruimen, maar prikken! Hoe Nederland opnieuw massaal gezonde dieren liet afmaken, report Tweede-Kamerfractie SP The Hague

Warren MA 1997 Moral status: obligations to persons and other living things. Oxford: Oxford University Press

Woods A Foot and mouth disease in Britain: the history, Centre for the History of Science, Technology & Medicine, accessed at www.chstm.man.ac.uk/news/fmd-faq.htm on June 2004.

Woods A February 2001 Foot and mouth disease, the 2001 outbreak and its historical precedents, Centre for the History of science, Technology & Medicine, Press release 22, accessed at www.chstm.man.ac.uk/news/pressrel-fmd.htm on June 2004

Welboren P, I van Zwieten, T Janssen 2003 Sociaal-emotionele begeleiding en psychosociale hulp bij dierziekten crises. Inventarisatie en verbeterpunten voor crises draaiboeken. Rapport EC-LNV nr. 2003/240, Expertisecentrum LNV, Ministerie van Landbouw, Natuur en Voedselkwaliteit, The Hague, The Netherlands

Wise S 2004 Animal rights. One step at the time. In CR Sunstein, & MC Nussbaum (Eds), Animal rights, current debates and new directions. US, Oxford University Press, 19-51.

Zijpp AJ van der, MJE Braker, CHAM Eilers, H Kieft, TA Vogelzang, SJ Oosting 2004 Foot and mouth disease, New values, innovative research agendas and policies, EAAP Technical Series no. 5, Wageningen Academic Publishers, the Netherlands

Social-ethical issues concerning the control strategy of animal diseases in the European Union: A survey

2

Social-ethical issues concerning the control strategy of animal diseases in the European Union. A survey

NE Cohen, MAPM van Asseldonk, EN Stassen

Published in Agriculture and Human Values 2007, 24(4) 499-510

Abstract In 2004 a survey was conducted in the member states of the European Union designed to gain greater insight into the views on control strategies for foot and mouth disease, classical swine fever, and highly pathogenic avian influenza with respect to the epidemiological, economic and social-ethical consequences of each of these animal diseases. This article presents the results of the social-ethical survey. A selection of stakeholders from each member state was asked to prioritize issues for the prevention and control of these diseases. A majority of stakeholders chose preventive measures as the preferred issue. An analysis was done to determine whether there were differences in views expressed by stakeholders from member states with a history of recent epidemics and ones without such a history, and whether there were regional differences. There were no differences between member states with or without a history of recent epidemics. There were indeed regional differences between the priority orders from Northern and Southern Europe on the one hand, and from Eastern Europe on the other.

Introduction

The European Union (EU) has recently faced major outbreaks of foot and mouth disease, highly pathogenic avian influenza (bird flu), and classical swine fever. The Netherlands recently experienced three major epidemics: classical swine fever in 1997–98, foot and mouth disease in 2001, and highly pathogenic avian influenza in 2003. The United Kingdom suffered a major foot and mouth epidemic in 2001, and Italy was confronted with highly pathogenic avian influenza epidemics in 1997–98 and again in 2000. In 2006 classical swine fever has again been reported in Germany, and highly pathogenic avian influenza has been identified in several member states.

In 1992 the European Union adopted a non-vaccination policy. This meant that animals were no longer vaccinated against certain infectious diseases and the control strategy was based on the stamping-out of an epidemic. This involved a standstill (movement restrictions) followed by the culling of all infected and healthy but susceptible animals within a 1 to 3 km area from the source(s) of the infection. This non-vaccination policy was considered to have two advantages over preventive vaccination. First, a non-vaccination policy is believed to stimulate free market trade of animal products between countries who have adopted this policy. Second, calculations indicated that the costs of preventive vaccination would be higher than the costs involved with controlling an epidemic (Koninklijke Nederlandse Akademie van Wetenschappen 2002). Accordingly, during each of the recent epidemics in Europe animals were not protected by vaccination, and stamping-out was the strategy of choice. Under this strategy, not only infected animals, but also millions of healthy animals were culled in the efforts to eradicate the diseases. During the foot and mouth disease epidemics more that 4 million animals were culled; during the classical swine fever epidemics more that 13 million animals were culled; and during the highly pathogenic avian influenza epidemics more that 41 million animals were culled.[1] These numbers include not only production animals destined for the food chain, but also backyard animals kept for non-commercial recreational purposes. The European Council Directive which introduced community measures against certain animal diseases does not distinguish between production animals and backyard animals, even though the latter group is not usually destined for food production or export purposes.

This stamping-out strategy has had a devastating impact on society as a whole. It has caused severe trauma to the people involved and has raised many questions about the morality of culling so many healthy animals and about the animal welfare problems resulting from improper handling and slaughtering of animals. The general public was confronted with footage of burning pyres of slaughtered animals and with the anger and grief of traumatized farmers and other animal keepers. In some member states this strengthened the position that adopting alternative

strategies for future epidemics was imperative, to better take into account society's changing ethical views on the culling of healthy animals, animal welfare, and the psychological impact on those persons directly involved. This led to an increasing demand to reconsider the European non-vaccination policy and discuss alternative future prevention and control strategies that would be acceptable to and supported by society at large.

Socio-psychological issues

Several studies have been performed to describe the social and psychological consequences of animal epidemics (Van Haaften and Kersten 2002 Cumbria Foot and Mouth Disease Inquiry Panel 2002 Institute for Health Research 2002 Huirne and Mourits 2002 Van Velzen and Dekker 2003).

After the last foot and mouth epidemic in the United Kingdom in 2001, an inquiry was performed in North Cumbria into the health and social consequences the crisis had on farmers and their families, on workers in related businesses, and on veterinarians and others directly involved (Cumbria Foot and Mouth Disease Inquiry Panel 2002). The findings of the studies identified several social and psychological issues. The mental health indicators indicated post-traumatic stress symptoms in farmers and in frontline workers involved in the culling and disposal of the animals. These symptoms were caused by stress created by circumstances over which these individuals had little control. Farmers had experienced a loss of confidence in central and local decision-makers and a loss of self-esteem and self-confidence due to a number of recent agricultural shocks that called their way of life and their social identity into question. Recent crises resulted in a decrease in public confidence in large-scale agricultural production methods. Stress was caused not only by the social isolation, the damage done to the social network, and insufficient communication from and with the authorities. The severe restrictions on animal movement, denying farmers access to their animals, the traumatic on-farm slaughter of healthy animals, and the burning pyres all combined to cause major traumas. On top of the social stress, farmers and affected non-farming businesses such as the tourism sector experienced a loss of work and income. Diversified farms combining farming and bed and breakfast facilities suffered double losses. The conclusion was that the authorities had offered insufficient assistance in business recovery, leaving many farms and businesses faced with debts.

In 2001 Van Haaften and Kersten (2002) performed a study among 661 Dutch dairy farmers who had been affected by the 2001 foot and mouth epidemic in the Netherlands to assess the social and psychological impact of the epidemic. The farmers were interviewed about their mental well-being (or lack thereof). The results showed that between 20% and 30% of the respondents suffered from socio-psychological problems such as stress, restlessness, tension, anxiety and depression, feeling downhearted and isolated, and sleeping disorders.

In another study, conducted by Huirne et al. (2002), a questionnaire was sent to 662 respondents among the Dutch general public. The results showed that the foot and mouth epidemic left a deep impression, especially with respect to the way the animals had been culled and disposed of (73%). Other domains of concern were the emotional and financial impact on the farmers, the way the crisis had been handled by the authorities, the isolation of the farmers, and the fact that animals were no longer seen in the countryside. The preferred strategy during a future outbreak was vaccination of all animals (70%) and isolation (54%), while a majority (72%) dismissed culling healthy animals to stop the spread.

The foot and mouth and the highly pathogenic avian influenza epidemic in the Netherlands have led to the mass destruction of not only production animals, but also of many backyard animals, some of which were rare breeds. The control strategy has been the cause of much unrest and protests among the keepers of backyard animals. Most were in favour of vaccination and were not at all convinced of the necessity of the culling of their animals based on economic considerations (Van Velzen and Dekker 2003).

Communication

Insufficient communication with the authorities has contributed to heightened stress and trauma for all involved, and has been described by the Cumbria Foot and Mouth Disease Inquiry Panel (2002) and by Van Haaften and Kersten (2002). The latter study describes how prior to the 2001 foot and mouth disease epidemic in the Netherlands, stakeholders were insufficiently prepared for an emergency situation and had not anticipated that a crisis would occur so soon. In the United Kingdom the authorities started planning only after the onset of the epidemic and failed to involve all stakeholders in the decision-making process for a draft contingency plan (such as the tourism sector and nature and environmental organizations). The resulting contingency plan thus operated from a veterinary approach only, without the support from other relevant stakeholders.

During the 2001 epidemic in the Netherlands there was insufficient communication between the Ministry of Agriculture and local authorities. The contingency plan had played a central role in the control strategy, but it was too focused on the veterinary aspects. There had been little cooperation between stakeholders and the Ministry of Agriculture at the national level and stakeholders took no part in the decision-making process, even though their expertise would have been very valuable. The contingency plan failed to anticipate either the importance of a joint strategy or the emotional consequences to those involved. On a positive note, however, cooperation at the regional level was effective.

After the crisis compensation payments were often delayed and were not transparent. By this time many stakeholders had changed their views about the stamping-out policy and had turned against the massive culling of so many healthy

animals and rare breeds. The policy to allow the import of vaccinated products from Argentina was considered inconsistent. Only then did the Ministry of Agriculture come to realize the importance of an interactive approach with active involvement of all stakeholders and that the contingency plan should include social as well as veterinary aspects.

Animal welfare

During and after the recent animal disease epidemics, the animal welfare problems encountered were a major topic in the public discussion and remain so to this day. The Farm Animal Welfare Council in its report to the British authorities (Farm Animal Welfare Council 2002), the Royal Society for the Prevention of Cruelty to Animals (Laurence 2002), and the Dutch Society for the Protection of Animals (Van den Berg 2002 Nederlandse Vereniging tot Bescherming van Dieren 2004) have monitored, evaluated, and criticized the animal welfare situation during the 2001 foot and mouth epidemic.

The scale of the slaughter to be performed within a limited time-frame, combined with a control strategy which was not adequate to deal with the scale of the epidemic, led to animal welfare problems involving cases of improper handling, killing, stunning, and transport of animals. Handling, restraint and killing methods in the field are very different from those in slaughterhouses. Concern was expressed over the unsuitable conditions for on-farm slaughter and inappropriate killing methods. These problems were exacerbated by the fact that handling and slaughter were sometimes in the hands of unskilled personnel not accustomed to working in disease control/field situations, and because delays had taken place in the slaughter of infected animals. Movement restrictions due to a transport ban and to a shortage in forage and bedding were reported to cause major animal welfare problems. Concern was expressed that uninfected animals had suffered severe welfare problems, or were killed unnecessarily for want of feed or land. Overcrowding caused grave physical problems in rapidly growing poultry and aggression and cannibalism in pigs. Transport sometimes took place over long distances and was a cause of further welfare problems.

Ethical issues

The last century has seen a major change in the mentality and attitude towards animals. Where people once regarded animals from a purely instrumental point of view, a shift has taken place towards a more protective and respectful attitude towards them. This has resulted in changing attitudes concerning the proper treatment of animals during their life and also in different views with respect to the killing of animals. Many considered the culling of healthy animals in the stamping-out of an epidemic as senseless, even though production animals are destined to be slaughtered for the food production anyway.

Noordhuizen-Stassen et al. (2003) performed a study into the societal and moral acceptability of the killing of kept animals. The views about the culling of so many (healthy) animals during the epidemics were taken as one example of the changing views concerning human-animal relationship.
A total of 1,939 respondents selected from the Dutch general public participated in the study, and in-depth interviews were performed with 43 experts. The majority (84%) of the respondents were of the opinion that the culling of healthy animals is morally unacceptable when the control strategy is based exclusively on economic motives, which are governed by European trade policies serving the livestock industry, which can be fairly described as large-scale and focused on the export market. The prevailing view was that the control strategy values economic interests over the lives of living creatures. It was not, however, considered unacceptable to kill animals for food production. The moral basis of this view was a respect for life taking into account the natural course of life of the animal. In this view, the killing of a healthy animal for the production of food is considered acceptable because it is the natural life cycle of a production animal; but the culling and destruction of healthy animals as a control measure during an epidemic for economic reasons is considered unacceptable because the "natural function" of the animal would not yet have been fulfilled.
These findings were corroborated by Stafleu et al. (2004), who described the opinion of three groups of four to seven Dutch pig farmers about their relationship to their animals. These farmers felt that the farmer and the animal each have a role to fulfil in the world as providers of high quality food. The animal is therefore functionally determined to live the life of a production animal. Culling healthy animals during an epidemic is considered senseless, since the animals had not been able to fulfil their task as production animals.

European survey

In 2004 a survey was conducted in the member states of the European Union to describe and analyze the economic, epidemiological, veterinary, and social-ethical consequences of the control strategy applied during recent epidemics of foot and mouth disease, highly pathogenic avian influenza, and classical swine fever in the European Union (Van Asseldonk et al. 2004). The questions of the socio-ethical survey addressed the above-mentioned issues of concern and in this article the results are presented.
The aim of this socio-ethical survey is to give more insight into the respective views held in the different member states of the European Union on future prevention and control strategies with respect to the socio-psychological and the ethical consequences to the people and animals involved. The survey thus aims to contribute to the discussion about alternative future strategies that society may come to support.

It was analyzed whether there is consensus on future strategies among the different member states in the European Union or whether different views exist. It was hypothesized that member states with a recent history of major animal disease epidemics would have developed certain views about the strategy applied therein and strategies for the future, especially with respect to the social, ethical, and animal welfare issues. Under this hypothesis, member states with no recent history of epidemics might hold different views, or might not have a sense of urgency to participate in the discussion. Furthermore, it was hypothesized that member states in different regions in the European Union might, due to their different geographical, economic, cultural, social, and religious backgrounds, hold different views. It was also considered whether views on the culling of animals and on the socio-psychological consequences, reflect different priorities in different regions in the European Union.

Method

For this survey a total number of 639 stakeholders were approached. To ensure that the choice of stakeholders was a representative selection of stakeholders present in the European Union as a whole and per member state, thus reflecting the ideas of a broad range of people and views, each stakeholder should be a member of one of the following organizations: the Groupe Permanent "Questions Veterinaires"[2] or a national representative of a European organization whose mission statement includes issues concerning epidemic animal diseases and their economic, social or ethical consequences; or a national organization directly linked to other relevant organizations or departments.

Clustering member states

The European Union does not categorize its member states by region in a manner relevant and applicable to this survey. Such categorization could be based on various criteria, for instance geographical, agricultural, or economic differences. In this survey the member states were regionalized into a northern, southern, and eastern region, based on their presumed geographical and cultural differences. The northern region included Austria, Belgium, Denmark, Finland, Germany, Ireland, Luxemburg, the Netherlands, Sweden, and the United Kingdom. The southern region included Cyprus, France, Greece, Italy, Portugal, Malta, and Spain. The eastern region include the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, the Slovak Republic, and Slovenia.

The member states were clustered into either a positive- or a negative-outbreak cluster, based on data from the OIE Handistatus II. Only member states which experienced one or more major epidemics (in terms of number of animals and/or a history of more than one epidemic) between 1996 and 2003 were clustered in a

"positive-outbreak cluster." Incidental small outbreaks, which involve only a limited number of farmers and animals, have no major social impact on the community. Therefore member states with incidental outbreaks or no outbreaks at all were clustered in a "negative-outbreak cluster." The positive-outbreak cluster included Belgium, Germany, Ireland, Luxemburg, the Netherlands, United Kingdom, France, Greece, Italy, Spain, Czech Republic, and Slovak Republic. The negative-outbreak cluster included Austria, Denmark, Finland, Sweden, Cyprus, Portugal, Estonia, Hungary, Latvia, Lithuania, Poland, Slovenia, and Malta.
Moreover, the United Kingdom, the Netherlands, and Italy were clustered into a separate 'high-incidence cluster'. This was based on the fact that these member states had each experienced recent outbreaks of (multiple) major epidemics with a high impact on society. It was postulated that this experience might distinguish these member states from the other member states in the European Union. Thus three country clusters were made: a negative-outbreak cluster, a positive-outbreak cluster, and a high-incidence cluster.

Clustering stakeholders
The stakeholders were clustered as follows:

- Representatives of the authorities. In this case the respondents were the Chief Veterinary Officers (CVOs)3
- Livestock industries and unions;
- Sectors directly linked to the livestock industry, such as the food-processing industry, slaughterhouses, and the transport sector (SL);
- Sectors not directly linked to the livestock industry, such as the tourism sector and retailers (SnL);
- Veterinary organizations and scientific veterinary institutes;
- Non-governmental organizations (NGOs), such as organizations for nature conservation, zoos, the environment, animal welfare and protection, breeders and keepers of rare breeds or backyard animals, consumer organizations, organizations dedicated to social issues, human health, or religion;
- Scientific academies or institutes in the field of agricultural or animal science, social studies, animal welfare, philosophy, ethics, food safety, and other relevant fields.

Questionnaire
A total of 639 questionnaires, translated into four languages, were sent by mail or e-mail. The survey consisted of closed questions, i.e. the respondent could only choose among a limited number of answers (indicators). This may have excluded certain issues of importance, but in such a large-scale survey this is unavoidable for a

useful comparative analysis. The questions focused on (1) the position of the stakeholders in the decision-making process; (2) their views about the current control strategy applied during an epidemic; and (3) their priorities for future policy.
Respondents were invited to score priority indicators, thus identifying the stakeholders' priorities in the discussion about current and future strategies. It is likely that different stakeholders will have different priorities and missions, which will lead them to having different ideas about the strategy to be chosen. This may create a situation of conflicting interests between stakeholders. Economic motives may prevail in the views of some; animal or human welfare motives may be prominent in the views of others. Each stakeholder will present arguments which are considered relevant from one particular point of view. These views will be reflected in the choice of indicators.
The total of scores was used to create a priority list. In the public debate, this priority list can be used as a starting point for a further discussion about future alternative strategies.
It can be argued whether a certain stakeholder is or is not involved in the decision-making process for an updated contingency plan for future epidemics, will reflect his or her position in the public debate about animal diseases. Stakeholders with a direct economic interest in the applied control strategy, such as farmers, agricultural organizations, and food-processors, are likely to have a prominent position in the decision-making process. Local authorities and veterinarians, who are responsible for communicating and executing the strategy, are also indispensable partners in the discussion. But the impacts of recent epidemics have made clear that economic and veterinary arguments by themselves afford insufficient grounds to justify the choice of a strategy. Sociological, psychological, and ethical issues have taken an increasingly prominent position in the public debate. A strategy based on non-vaccination, movement restrictions, and massive culling of healthy animals that is insufficient in its attention to communication, animal welfare, and social consequences will meet with less support from the farming community and others directly involved as well as from the general public. A national government can recognize and accommodate these views by including representatives of organizations such as animal welfare organizations, breeders and keepers of backyard animals, human health organizations, zoos, nature conservation, the tourism sector, and consumer organizations in the discussion. Therefore, it is argued here that those issues that have received a prominent position in the national public debate, and as such are acknowledged by the national authority, are reflected in the spectrum of stakeholders involved in the decision-making process.

Data analysis
Comparative rating scales were used for deriving relative judgments by asking the respondent to divide 100 points between the indicators according to his or her

assessment of their importance. These comparative rating scales required the respondents to make judgments on each indicator with direct reference to judgments on the other indicators being evaluated (Van Asseldonk et al. 2004).
The data were analyzed by member state and by stakeholder cluster, and presented in percentages. The number of questionnaires received per member state and per stakeholder cluster as well as the number of stakeholders per cluster was unevenly distributed. Therefore, the results are presented at the regional level and not at the stakeholder level.

Results

One or more responses were received from 24 member states and from 6 stakeholder clusters. No representatives from Malta or from the SnL cluster responded to the questionnaire. A total number of 86 questionnaires were received, which is a response rate of 13%. The highest response rate came from Northern Europe (19%) and more specifically the Netherlands (47%). In the stakeholder cluster the government and the veterinary organizations had the highest response rate: 76% and 25%, respectively. Because many member states have not experienced recent outbreaks and involvement of a broad spectrum of stakeholders in these member states in a discussion about alternative strategies presumably has not been an issue, the response rate from those member states was (as expected) low. Northern Europe was represented with 59 respondents from 11 member states, Southern Europe with 16 respondents from 5 member states and Eastern Europe with 12 respondents from 8 member states.
Most respondents were involved in the decision-making process (74%), especially the CVOs (100%) and the veterinary organizations (92%). Fourteen percent of the respondents were not involved, and 12% did not indicate their involvement. The next-highest levels of stakeholder involvement were by the livestock industry (69%), NGOs (63%), the SL (58%), and scientific organizations (57%).
The respondents were asked which stakeholder groups in their country are the most important actors in the decision-making process of a control strategy. All stakeholders were unanimous in their opinion that the government is the most important actor, followed by the farmers unions and the veterinarians. This outcome was to be expected, since it is ultimately the national and European policy-makers who govern the regulations and make the decisions about the control strategy to be applied. It was interesting to see which stakeholders were considered to have the least influence of all, i.e., the keepers of backyard animals and the SnL sector. The protest of the former group against the culling of healthy backyard animals has only been prominent in the Netherlands and not so much in other member states. As noted above, no representatives from the SnL category responded to the questionnaire.

The efficiency of a control strategy to successfully eradicate a disease was seen by most as the most important issue in recent epidemics, followed by the social and financial consequences for the people involved (Table 1). Animal health and welfare scored third place. In the Netherlands, animal welfare scored second place and was considered a more important issue than efficiency. Animal health and welfare were considered less important issues in the United Kingdom and Italy. The veterinary organizations and the NGOs gave a higher priority to animal health and welfare as compared to the other stakeholders.

Table 1 Relevant issues in the control strategy applied by percentage

	Eff	SE	ME	CI	AH	AW	T	lC
N. Europe	23	15	9	8	9	9	6	5
S. Europe	25	14	8	11	9	11	3	5
E. Europe	18	15	9	10	4	13	6	5
Pos	23	14	9	9	9	10	4	4
Neg	20	15	7	9	6	11	9	7
NL	12	14	14	9	12	13	2	7
UK	26	16	6	9	9	8	9	5
Italy	24	19	6	18	9	7	3	3
Total HI	21	16	9	12	10	9	5	5
Gov	21	16	14	15	8	13	7	7
Livestock	26	35	4	5	6	5	11	10
SnL	32	11	19	17	6	8	4	4
Veterinary	31	17	4	5	12	20	6	5
NGOs	31	9	5	8	15	18	7	6
Scientific	18	34	8	12	10	7	5	5
Total SH	27	20	9	10	10	12	7	6

N S E = Northern Southern Eastern Europe Pos= positive outbreak cluster Neg= negative outbreak cluster NL=Netherlands high incidence UK=United Kingdom high incidence, Italy=Italy high incidence Total HI= total high incidence Gov=government SnL= Sectors not directly linked to the livestock industry NGOs non-governmental organisations Total SH=total stakeholders Eff=efficiency SE=socio-economic ME=macro-economic CI= commercial interest AH=animal health AW=animal welfare T=tourism lC=live-cycle animal

All respondents chose epidemiological criteria as the most important consideration in the choice of a control strategy, followed by economic criteria. The exception was the NGOs who rated socio-ethical criteria in second place. This result does not necessarily reflect the situation the respondents would prefer, but may instead reflect the present situation as viewed by the stakeholders. Not all respondents are involved in the decision-making process, and they may feel that socio-ethical criteria should, but in practice are not given a high enough priority.

The priority order of important issues for future strategies was largely similar in the positive- and the negative-outbreak clusters, but different in the different regions and in the high-incidence cluster (Table 2).

In the positive- and negative-outbreak clusters the order was (1) preventive measures and (2) social, psychological, and financial consequences. Respondents from Northern and Southern Europe considered preventive measures the most important issue. In Northern Europe communication was deemed almost as

important and rated second place. Respondents from Eastern Europe chose social, psychological, and financial consequences as the number one priority issue and preventive measures second. Overall, animal welfare and related ethical issues scored third or fourth place. The Netherlands considered animal welfare to be the highest priority issue and socio-psychological and financial issues and preventive measures shared second place. In the United Kingdom the socio-psychological and financial issues were chosen as the first priority issue and communication rated second place. In Italy preventive measures and communication were considered first and second, respectively. In the stakeholder cluster preventive measures scored the highest. Animal welfare scored relatively low with the stakeholders in or related to the livestock industry. The NGOs considered a communication procedure to be the first priority and animal welfare scored second place.

Table 2 Priority issues for future strategies by percentage

	Com	SPF	AWE	PM	A	Other
N. Europe	24	21	17	25	8	5
S. Europe	21	23	12	29	8	6
E. Europe	14	34	18	26	8	0
Pos	21	23	18	25	8	5
Neg	24	24	11	29	8	4
NL:	14	23	30	23	9	0
UK	20	28	16	18	17	3
Italy	23	18	14	38	7	0
Total HI	19	23	20	26	11	1
Livestock	22	29	9	27	11	1
SnL	18	25	9	29	8	12
Veterinary	23	18	20	29	9	2
NGOs	27	22	23	21	4	3
Scientific	15	27	21	27	10	0
Total SH	21	24	16	27	8	4

N S E =Northern Southern Eastern Europe Pos=positive outbreak cluster Neg= negative outbreak cluster NL=Netherlands high incidence UK=United Kingdom high incidence Italy=Italy high incidence Total HI= total high incidence SnL= Sectors not directly linked to the livestock industry NGOs non-governmental organisations Total SH=total stakeholders Com=communication SPF=Socio-psychological and financial consequences AWE=Animal welfare and related ethical issues PM=Preventive measures RA Reputation and position agricultural sector

Discussion

In this discussion, the results from this survey are compared to other studies and to recommendations made by expert committees.

Studies performed in the Netherlands and the United Kingdom have focused on the sociological and psychological consequences of animal epidemics and on the ethical issues of culling healthy animals. Expert committees in the United Kingdom (Anderson 2002 The Royal Society 2002) and in the Netherlands (Raad voor het Landelijk Gebied and Raad voor Dieraangelegenheden, 2003, 2004) have issued advice on future policy, including risk assessment and preventive measures,

vaccination, contingency planning, communication, and animal welfare. Animal welfare organizations have advised specifically on animal welfare issues (Farm Animal Welfare Council 2002 Laurence 2002 Van den Berg 2002).

Preventive measures

Preventive measures serve to reduce the risk of transmission of the virus and include hygiene measures and measures to regulate human-animal and animal-animal contact. Preventive measures are of course all-encompassing in tackling all the issues under discussion, because the prevention of an animal disease epidemic will prevent human trauma and the culling of animals at the same time. Therefore, the respondents' choice for preventive measures as the most important priority issue reflects their conviction that it is better to reduce the risk of an outbreak than to eradicate a disease, and is in line with the recommendations made by the expert committees.

The expert committees considered it imperative to provide farmers and keepers of backyard animals with relevant information about prevention, spread, and hygiene. A zero-risk situation was not considered feasible, but preventive measures taken within the farming business, such as better hygiene and hygiene protocols, attention to contact structure between farms (animal-animal and animal-human), a strong reduction of animal transport, and improved diagnostics should result in reducing the risk factor. The committees argued that there should be a differentiation in control and preventive measures per animal species, business type, region, and disease. In the long run, compartmentalization of agricultural regions of cattle-farms is required. An 'Early Warning System' as formulated by the Royal Society (2002), should monitor international animal transport to facilitate timely measures.

Vaccination as a preventive measure is also presented as a valid tool to prevent diseases from occurring or spreading. In recent public discussions, many questioned the European non-vaccination policy. It was felt that international trade and market priorities drove the World Trade Organization decision to maintain an infection-free status without preventive vaccination in the European Union member states. Preventive vaccination is more expensive as compared to pre-emptive culling and stamping-out of an emerging disease. Veterinary and socio-psychological motives which favour preventive vaccination and other consequences of this policy, such as the consequences for tourism, zoo animals, wildlife, rare breeds, and the reputation of the agricultural sector, were not taken into consideration (Koninklijke Nederlandse Akademie van Wetenschappen 2002). Furthermore, inclusion on the OIE list of 'foot and mouth disease-free countries without preventive vaccination' gives countries the right to ban the import of meat products from countries where vaccination is applied or where foot and mouth disease has emerged, thus protecting a listed country's own market.

The expert committees have recommended further possible use of emergency vaccination-to-live during an epidemic, since vaccination contributes to a reduction in the number of animals culled. In the Netherlands the control strategy had included emergency vaccination of all susceptible animals to stop the disease from spreading, but these animals were subsequently culled. Furthermore, vaccination-to-live should include non-infected animals, backyard and recreational animals, zoo animals, and rare breed ruminants.

Having emergency vaccination-to-live as part of a control strategy necessarily implies that meat and meat products from vaccinated animals will enter the food chain normally. As a consequence, the trading of products of vaccinated animals on the international market should receive extra attention, including consumer information. During the foot and mouth disease crisis in the United Kingdom, the Nestle Company expressed serious reservations about accepting milk from vaccinated cows because it presumed and feared a consumer reaction. This was referred to as the 'Nestle factor'. It was unanimously agreed that there is a complete absence of any danger associated with vaccinated products, and it was considered important to encourage retailers to facilitate the marketing of vaccinated products.

Vaccination is also supported by animal welfare organizations. According to the Farm Animal Welfare Council (2002) an effective national policy of compulsory vaccination is an option, provided it has been granted European Union approval and provided the public is reassured that products from vaccinated animals present no food safety issue. During an epidemic, ring fencing by vaccination, leading to fewer animals being culled, has significant welfare benefits. The Dutch Society for the Protection of Animals (Van den Berg 2002) favours a Europe-wide policy for preventive vaccination, including preventive vaccination of rare breeds, zoo animals and backyard animals, and emergency vaccination-to-live.

Animal epidemics and the culling of animals are not restricted to farm animals; they afflict backyard animals and animals in nature reserves and zoos as well. In the Netherlands, the discussion whether or not to vaccinate zoo animals, endangered species, (semi) wildlife and rare animals was just as intense as the public outrage at the destruction of backyard animals. Rare breed ruminants often inhabit nature reserves for the purposes of cropping the fields, for biodiversity, and the enjoyment of experiencing animals in a natural environment. Zoos house many rare and valuable species and are involved in international breeding programs for endangered species. Schaftenaar (2002), in a paper for the special OIE series on foot and mouth disease issues, stated that the international community recognizes the importance of these breeding programs. In his paper Schaftenaar recommends that the zoo community should propose an international research program to study the efficacy of vaccines and the application of diagnostic tests in non-domestic animals kept in zoos; zoos could then apply to the OIE for recognition of their participation in such

a research program as zones free of foot and mouth disease, where vaccination is applied.
At the time of this writing in 2006, a pilot study on vaccinating backyard animals is taking place in the Netherlands. The results of this pilot study will be presented to the other member states.

Communication
In their advice, the Dutch Councils acknowledged that during the recent crises, lack of communication led to frustration among those involved. There is a need to give more attention to improved communication between central and local authorities. It was further emphasized that the development and execution of future strategies are a shared responsibility and that all stakeholders should thus participate in the discussion about updating contingency plans. In this discussion, the moral outrage at the massive culling of healthy animals requires special attention, since this involves society as a whole. Keepers of backyard and zoo animals and nature conservation organizations demand more attention to their specific situation.
Furthermore, it was recommended that authorities should be better prepared, specifically by organizing a local crisis team consisting of people with knowledge of the situation who would give more attention to social aid during and after a crisis.

Reputation and position of the agricultural sector
Stafleu et al. (2004) have described the changing reputation of the farming community and society's critical attitude towards the agricultural business, partly as a result of recent crises. Farmers are criticized because of the relationship assumed to exist between current farming practices (large-scale factory farming) and the disastrous effects of recent epidemics. It is thought that farmers are guided mainly by economic motives, and less so by a concern for animal welfare, food safety, and the environment.
The pig farmers (three groups of four to seven people) interviewed for this study claimed that their priorities and motivation for farming include respect for animals, business continuity, and living with the seasons. Farmers value free enterprise, and farming is often a family business. They appreciate working with the living nature and animals. Respect for animals, in their view, usually finds expression in matters of health and welfare. They respect the functions prescribed to the production animal and the farmer; i.e., the farmer and the animal have a shared role to fulfil in the world as providers of high quality food. This is considered more a calling than a profession; it is a way of life and the very essence of being a farmer. In this respect the culling of a healthy animal (even in a crisis) is considered a sin, because the natural function of the production animal will not be fulfilled.
Another Dutch study (Van Haaften and Kersten 2002) identified two categories of dairy farmers. The farmers in the first category were described as motivated by

economic motives, and they considered animals as a production factor. The farmers in the second category were emotionally attached to their animals, acknowledged the intrinsic value (a value in their own right) of animals, and granted animals a central position in the farming business, even considering them as members of the family. These different points of view were reflected in the preferred choice of control strategy to be applied. The first category regretted the culling of animals but emphasized the importance of a strong position on the international export market. The second category was deeply angered by the culling of healthy animals, especially since there was a vaccine at hand. Farmers whose philosophy of life includes respect for the natural course of life were especially outraged. Under the current policy, this category of farmers felt they were forced to run their business in a non-animal friendly way and could not understand the non-vaccination policy in order to protect export interests.

The reputation and position of the agricultural sector was considered the least important issue in the European survey and usually came up last in the priority listing. Expert committees did not address the issue explicitly, but implicitly a future policy should rely on a better understanding and a shared responsibility between all stakeholders. Therefore, a control strategy which is acceptable in the public domain will likely improve the reputation of the livestock industry.

Conclusion

The results of this survey show that the recommendations made by expert committees and animal welfare organizations are in line with the results of this study, especially with respect to preventive measures and social, animal welfare, and ethical issues. Therefore, even though the response rate was low, some conclusions can be drawn.

The hypothesis that the positive-outbreak cluster and the negative-outbreak cluster might hold different views concerning animal welfare and socio-psychological issues could not be substantiated from the results of the priority listing. The results furthermore showed that the priority orders expressed in the three member states of the high-incidence cluster (the Netherlands, the United Kingdom, and Italy) differed from one another.

The hypothesis that stakeholders from different regions of the European Union might hold different views concerning the priority issues was substantiated as each of the three regions responded with a different priority order. It is interesting to note that socio-psychological and financial issues rated highest with respondents in Eastern Europe, even though no member state in this region has recently had a major epidemic. We recognize that this survey is just a first step and the results may have been affected by the limited number of stakeholders from this region who had responded, and because the representation of stakeholders was not evenly

distributed in and between the member states. Therefore, we can only speculate to explain the results.

These differences in views may be attributed to variations in agricultural history and structure of the rural areas of the individual regions. In Northern Europe for example and in the Netherlands in particular, the agricultural sector has shifted towards large-scale agri-businesses depending mainly on the export of animals and animal products. Consequently, animal epidemics affect the livestock sector as whole. Opting for preventive measures requires a (financial) commitment of all parties involved in the livestock sector because the effectiveness of preventive measures is dependent on the cooperation of all. The livestock industry in Eastern European countries is not homogenous. The dual farm structure found there is no doubt one of the characteristics of agriculture which impacts the views held in these member states. For example, there are many small farms which are often part-time in nature; but there are also very large enterprises. The emphasis in these countries may be less on the export of products than on individual efforts to improve the efficiency of one's business in terms of modernization and production. It can be plausibly concluded that different priorities on control strategies might be attributed to different levels of perception: export-oriented countries may think in terms of the benefit to the livestock sector as a whole, while Eastern European countries may consider the consequences for the individual farmer first. The outcome may mirror farmers' individual interests versus sector interests. This duality of interests was observed at the national level in the study of Van Haaften and Kersten (2002), who described a clash of interests between farmers who valued a strong international trade position over the lives of their animals against farmers who had failed to see the justification of a non-vaccination policy and who had suffered deeply over the loss of their animals.

Recommendations

The survey has given a first impression of the spectrum of views held in the member states of the European Union on the subject of future control policies. We recommend further research not only at the European, but at the national level as well, for several reasons. First, relevant stakeholders are more easily identified and approached at the national level. This should stimulate their involvement in the survey, thereby increasing the response rate and in turn resulting in a more representative number of respondents from all stakeholder categories. Second, a stakeholder study at the national level may very well uncover issues of importance not addressed in this study, in which the stakeholders' possible responses were limited to the indicators presented them. While these were comprehensive, other relevant issues and indicators are certainly possible. Lastly, a series of comparative

national surveys would potentially offer greater understanding of the regional differences observed herein.

The diversity in the spectrum of views observed and described herein may be the result of the various respondents' individual experiences with outbreaks, of a stakeholder's position in the public debate, and of social and cultural differences between the member states. Such social and cultural differences may be reflected in differing perspectives on what constitutes morally acceptable treatment of animals. The relationship between man and animal has in recent years evolved from a purely functional relationship in which the animal is valued mostly for its instrumental utility to humans, towards one in which respect for the value of the animal as a being in its own right plays a significant role. The debate about animal welfare and respect for life varies in prominence from one member state to another and may also vary with respect to animal species (e.g., cloven-hoofed animals versus poultry). While beyond the scope of this study, it would be interesting and useful to examine how views on our moral responsibility towards animals differ in various member states and whether differences should be understood in terms of differences in culture, rural structure, or otherwise.

Actions taken to control recent epidemics consistently indicated a balancing between the interests of the various stakeholders; but in the Netherlands, acknowledgement that keepers of backyard animals, who keep animals for non-commercial purposes, and professional livestock farmers have different interests came only after the epidemics had been contained. Over the last few decades, the scale of livestock farming in the Netherlands has grown considerably, even though the number of farms and farmers has decreased. At the same time, ever more people are keeping backyard animals for company, for breeding, or for recreational purposes. These people usually have a strong emotional bond with their animals and fail to see the justification for culling healthy animals for economic reasons. This has led to major traumas and to strong resistance to the culling of healthy backyard animals within this group. In order to avoid or at least mitigate this, any successful control strategy need take into account the non-economic interests of this group. Towards this end, a national-level survey could identify to what extent keepers of backyard animals in the different member states can and should be seen as a separate group with their own interests. It might also explore whether differences in the sociology of respective rural areas, farming practices, perceptions of their way of life, and views on human-animal relationships result in members within this group, but from different member states, have different values and perspectives. Such a survey would require a sound definition of this potential new stakeholder group, in order to distinguish its members from professional farmers.

The balancing of interests applied in controlling epidemics has involved not only the interests of the different stakeholders, but also the interests of humans (economic, financial, and social) on the one hand and animals (welfare issues, respect for life)

on the other. Recent outbreaks of highly pathogenic avian influenza H5N1 in 2005 and 2006 posed a novel health hazard to humans. In a future outbreak of highly pathogenic avian influenza H5N1, a potential human health risk may lead to a re-balancing of interests. An additional survey with a focus on the outbreaks of highly pathogenic avian influenza of type H5N1 in Europe in 2005 and 2006 may clarify how a potential human health risk is appraised in the balancing of human versus animal interests.

Vaccination as a means of preventing or controlling an animal disease – whether with or without an attendant human health risk – has been extensively discussed in recent conferences, as well as by expert committees. Both preventive vaccination and emergency vaccination-to-live are considered valuable and sensible choices for addressing these concerns in the future, as they offer the advantages of avoiding further social and psychological trauma to those involved and the culling of healthy animals.

Notes

1. Data about the number of animals infected and culled during animal disease epidemics and data about countries with outbreaks of animal diseases were obtained from the World Organisation for Animal Health (Office International de Epizooties at www.oie.int: Handistatus II).
2. National representatives of the European organizations organized in the Groupe Permanente "Questions Veterinaires" are: Committee of Agricultural Organizations in the EU (COPA), General Committee for Agricultural Co-operation in the EU (COGECA), European Liaison Committee for the Agri-food Trade (CELCAA), Confederation of Family Organizations in the European Community (COFACE), Confederation of the Food and Drink Industries of the EU (CIAA), Eurocommerce, European Community of Consumers Co-operatives (EUROCOOP), European Consumers Organization (BEUC), European Federation of Trade Unions in the Food, Agriculture and Tourism Sectors and Allied Branches (EFFAT), Federation of Veterinarians of Europe (FVE), Syndicat Européen des Travailleurs de l'alimentation de l'hôtellerie et des Branches Connexes (SETA-UITA) dans l'UITA (observer).
3. CVOs are the chief veterinary officers who are responsible for the veterinary policy advice to the minister, formal admittance of veterinary medical products, veterinary disciplinary law, animal welfare and crisis management.

Acknowledgements

We would like to thank Leo den Hartog, Johan Statius Muller, and Stellajane Holmes for their valuable advice and assistance.

References

Asseldonk M van, RM de Jong, K de Vlieger, M Huirne (eds.) 2005 prevention and control of foot and mouth disease, classical swine fever and highly pathogenic avian influenza in The European Union: An integrated analysis of epidemiological, economic and social-ethical aspects. Wageningen and Utrecht, the Netherlands: Wageningen University and Research Centre, Utrecht University, Consortium for Veterinary Epidemiology and Economics

Anderson I 2002 Foot and mouth disease: lessons to be learned inquiry report. HC888 July 22, 2002. London, United Kingdom: The Stationary Office

Cumbria Foot and Mouth Disease Inquiry Panel 2002 Cumbria foot and mouth disease inquiry report. Retrieved from www.cumbria.gov.uk on June 1, 2004

Farm Animal Welfare Council 2002 Foot and mouth disease 2001 and animal welfare: Lessons for the future. London, United Kingdom: Farm Animal Welfare Council.

Haaften EH van, PH Kersten 2002 Veerkracht. Report no. 539. Wageningen, The Netherlands: Alterra.

Huirne RBM, M Mourits, F Tomassen, JJ de Vlieger, TA Vogelzang 2002. MKZ verleden, heden en toekomst, over de preventie en bestrijding van MKZ. The Hague, the Netherlands: Landbouw Economisch Instituut.

Institute for Health Research 2002 Evidence submitted to Cumbria Foot and Mouth Disease Inquiry Panel. Lancaster, United Kingdom: Lancaster University.

Koninklijke Nederlandse Akademie van Wetenschappen 2002 Bestrijding van mond– en klauwzeer, 'stamping-out' of gebruik maken van wetenschappelijk onderzoek. Amsterdam, The Netherlands: Royal Netherlands Academy for Arts and Sciences

Laurence CJ 2002 "Animal welfare consequences in England and Wales of the 2001 epidemic of foot and mouth disease." Scientific and Technological Review of the Office International de Epizootie 21(3): 863–868

Nederlandse Vereniging tot Bescherming van Dieren 2004 Reactie van de Dierenbescherming op de evaluatie van de vogelpestcrisis 2003 n.a.v. het rapport van het bureau Berenschot en de reactie van het kabinet. The Hague, The Netherlands: Dutch Society for the Protection of Animals

Noordhuizen-Stassen EN, LJE Rutgers, JM Swabe 2003 Het doden van gehouden dieren. Utrecht, The Netherlands: Utrecht University

Raad voor het Landelijk Gebied and Raad voor Dieraangelegenheden 2003 Dierziektebeleid met draagvlak. Advies over de bestrijding van zeer besmettelijke dierziekten, Deel 1 advies. Report RLG 03/8 RDA 2003/08, The Hague, The Netherlands: The Council for the Rural Area and The Council for Animal Affairs

Raad voor het Landelijk Gebied and Raad voor Dieraangelegenheden 2004 Dierziektebeleid met draagvlak. Advies over de bestrijding van zeer besmettelijke dierziekten, Deel 2 Onderbouwing van het advies. Report RLG 03/8 RDA 2004/01. The Hague, The Netherlands: The Council for the Rural Area and The Council for Animal Affairs

Royal Society 2002 Infectious diseases in livestock, scientific questions relating to the transmission, prevention and control of epidemic outbreaks of infectious disease in livestock in Great Britain. London, United Kingdom: The Royal Society

Schaftenaar W 2002 "Use of vaccination against foot and mouth disease in zoo animals, endangered species and exceptionally valuable animals." Scientific and Technological Review of the Office International de Epizootie 21(3): 613–623

Stafleu F R, CC Lauwere, KH de Greef, P Sollie, and S Dudink 2004 Boerenethiek. eigen waarden als basis voor een 'nieuwe' ethiek. Een inventarisatie. Utrecht, The Netherlands: Ethics Institute, Utrecht University.

van den Berg B 2002 Evaluatie van het welzijn van dieren tijdens de mond – en klauwzeercrisis in Nederland in 2001. The Hague, The Netherlands: Dutch Society for the Protection of Animals.

Velzen K van, I Dekker 2003 Niet ruimen, maar prikken! Hoe Nederland opnieuw massaal gezonde dieren liet afmaken. The Hague, The Netherlands: Tweede-Kamerfractie SP

Keeping backyard animals in the Netherlands

A study into to the nature of the practice, its specific human-animal bond and views on the culling of healthy animals during an animal disease epidemic

3

Keeping backyard animals in the Netherlands. A study into to the nature of the practice, its specific human-animal bond and views on the culling of healthy animals during an animal disease epidemic

NE Cohen FWA Brom EN Stassen

Submitted to Society & Animals 2010

Abstract During three recent animal disease epidemics in the European Union, millions of healthy non-human animals were culled. This was done to stop the disease from spreading and to restore free trade between 'disease-free' countries. The culling was met with major resistance by animal keepers and society at large. This was partly due to the fact that this culling strategy did not distinguish between commercial and non-commercial animal practices, even though these practices differed with respect to their nature and specific human-animal bond. Many backyard animal keepers resisted the culling of their animals. They felt that culling was not justified, because backyard animals were not kept for the food production and were therefore not exported.

Presently, new prevention and control strategies are developed at the European level that aim for more public support. To this purpose more should be known about the various animal practices with respect to the nature of the practice and its specific human-animal bond. In this paper the results are presented of a study performed among backyard animal keepers in the Netherlands. The practice is described in terms of a number of demographic characteristics, the species kept, the reason to keep backyard animals, and the specific human-animal bond. Furthermore, the backyard animal keepers were asked to give their views on their relationship with animals and nature, the killing and culling of animals, their trust in the government with respect to the culling, and their preferred prevention and control strategies.

Introduction

From 1997 onwards, Europe faced three epidemic outbreaks of classical swine fever (1997-1998), foot and mouth disease (2001) and highly pathogenic avian influenza (2003). Millions of infected and healthy non-human animals were culled in the stamping-out strategy (www.OIE.int Handistatus I I, retrieved November 2007). This included not only animals kept for the production of food, but also backyard animals, animals in nature reserves, and rare breeds. The Netherlands and the United Kingdom especially were two countries that were faced with the consequences of major outbreaks. This choice to cull instead of to vaccinate was motivated by veterinary and economic reasons. At that time no marker vaccine was available by which an infected animal could be distinguished from a vaccinated animal. Moreover, a non-vaccination policy enabled free trade between countries that had adopted this policy. Free trade was only allowed between countries with a disease-free status. Calculations of the financial consequences of a presumed outbreak showed that preventive vaccination was more expensive than culling (Berendsen 1991). From an economic and veterinary point of view culling was defendable. From a social point of view it was contested and resisted to such an extent that nationwide social unrest and civil disobedience followed. Trauma was the result, not because the economic reasons in themselves were contested but because economic reasons were no longer considered sufficient justification to cull healthy animals at such a large scale. It had become a collision of moral convictions about the right or wrong reasons to kill animals. This made clear that economic decisions are value-laden, because it weighs the economic value of animals against their value as companions, as members of a rare species, as animal co-farmers, and as living beings with a right to life.

Our moral convictions about what is right and what is wrong in the use and treatment of animals is deeply embedded not only in our bond with animals in our human community but also in all kinds of social, cultural, religious, regional or other structures (Armstrong and Boltzer 2003). It is also a part of the whole of public morality about how people should live peacefully with each other, with animals and with the natural world. As social change occurs all the time, our convictions about animals change accordingly. This may remain unnoticed for some time until an acute animal issue demands the attention and requires one to take position. The epidemics were such a situation. It revealed the existence of new animal practices with a human-animal bond different from the farming practice and with different values with respect to their animals. Backyard animals for instance are mainly kept for non-commercial reasons, and are usually not sold or exported. Their keepers felt that the stamping-out policy had favoured professional farmers over other animal keepers, because it was mainly designed for the benefits of the livestock sector. It

became clear that this practice had up till then been invisible to policy-makers in the drawing up of the then current control strategy. As a result, a re-evaluation of the prevention and control strategies is taking place at the international level, because it is acknowledged that future policy-making requires knowledge of existing *and* new animal practices and their moral convictions (Raad voor Dierenaangelegenheden 2003, 2004). Therefore, it is helpful to learn more about these practices, to better anticipate their interests to avoid further unrest.

Backyard animal keeping

In a changing Dutch rural area, new animal practices are emerging (Raad voor het Landelijk Gebied 2001). An animal practice is a set of activities involving animals, with a certain aim, and with its own internal human-animal bond (Waelbers et al. 2004 Velde et al. 2002). These new animal practices are distinct from the commercial livestock sector, in that animals are now also kept for other purposes such as hobby breeding, company, recreation, education, therapeutic reasons or sport. These new developments in animal keeping have led to a shift in the human-animal bond, from a functional to an individual and emotional valuation, in which animals serve a different purpose and are valued as an individual and an experience.

In spite of these developments, policy makers have not given much attention to this diversity of animal keeping in the rural area and its specific human-animal bond. The practice of backyard animal keeping has only been described by a few authors in the Netherlands (Ziel 2003 Treep et al. 2004 Sijtsema et al. 2005 Raad voor Dieraangelegenheden 2003). There is no comprehensive definition of the practice, and the term 'backyard animal' has a different meaning in different countries. It may refer to animals who are kept outdoors for non-commercial purposes, but is also used to refer to animals who are kept by smallholders for the small-scale commercial production of animal products. The term 'hobby farming' is used to describe small scale farmers who breed and sell animals not as a major source of income, but as a side activity which is also seen as a way of life (Holloway 2000, 2001 Wilkie 2005). In the Netherlands, the term 'hobby animal' is used to emphasise that these animals are kept for recreational and not for commercial purposes. In the current study, the term 'backyard animal' is chosen to describe animals who are kept outdoors for non-commercial purposes and to avoid any confusion with the term 'hobby farming'. The Dutch Council for Animal Affairs (English translation of Raad voor Dieraangelegenheden) defines backyard animals as '*animal species normally kept for production purposes, especially cloven-hoofed animals - such as cattle, pigs, sheep, and goats - and horses and poultry. Backyard animals are not kept for production purposes and therefore do not serve an economic purpose. They are kept for educational, recreational or hobby reasons'* (Raad voor Dierenaangelegenheden 2003/02, translated by the authors). There are no definite data about the total number of non-commercial backyard animals and their keepers in the Netherlands. The number of keepers is estimated to be up to 400,000

people (Treep 2004). The number of animals kept is estimated as: poultry and waterfowl: 1,000,000-1,500,000, sheep: 450,000, horses and ponies: 200,000, goats: 112,000, pigs: 2,000-4,000, and cows: 3,000-4,000 (Treep 2004).

Aim of the study

The aim of this study is to provide more insight into the practice of backyard animal keeping in the Netherlands. This was done by describing the nature of the practice, its specific human-animal bond, and the views of the keepers on their relationship with animals and nature, the killing and culling of animals, their trust in the government, and their preferred prevention and control strategies. Moreover, the moral vocabulary used by these keepers who had experienced the epidemics was studied to describe their moral objections to the culling. In this paper, the results of an empirical study performed in 2006 among keepers of backyard animals in the Netherlands are presented.

Methodology

In 2006 a qualitative study and a quantitative survey were performed among keepers of backyard animals in the Netherlands. For the qualitative study, 24 interviews were held with representatives of 20 organisations, which served the interests of non-commercial breeders and keepers of backyard animals. Sometimes more than one interview was conducted per organisation, when the interviewees had specific knowledge or experience relevant for the study. The organisations included four umbrella organisations (which are organisations that include and represent the interests of backyard animal keepers: ten organisations for cloven-hoofed animals, and ten for poultry or other birds). The aim of the interviews was to constitute a basis for the survey, and for a better understanding of the results of the survey. The survey was performed among 214 backyard animal keepers, who were contacted through the above-mentioned organisations and a call on www.marktplaats.nl. Marktplaats.nl is comparable to eBay, and is a place to exchange, sell or buy goods, products and animals, such as backyard animals. The survey consisted of closed questions about the nature of the animal practice, described by means of a number of demographic characteristics of the respondents (i.e. gender, age, and education level), the animal species kept, the reason for keeping animals, and the human-animal bond. Other questions concerned the nature of the human-animal bond. This bond can be described as relational, functional, or a combination of the two. In this study a bond was defined as relational when the main aim is the personal contact between the human and the animal, such as between companion animals and their keepers. Still in this relation all kinds of functional activities with the animals can be performed, such as breeding a rare species, or horseback riding. In the current study a bond is called relational, when the main aim is the contact

between the person and the animal. A bond was defined as functional when it is mainly based on the utility of the animal, such as between farmers and animals kept for the food production. A farmer may have a personal bond with his or her animals, but the ultimate aim of the practice is to provide food on a commercial basis.

Other questions were about the views on the interrelation of people with animals and nature. To describe these interactions the typology by Kupper was used (Kupper 2009). These typologies describe four viewpoints on animals: the biocentric, the relational, the functional and the holistic view. In the biocentric view, the emphasis is not so much on a relation between two individuals, but on an interconnection between animals and humans who are dependent on each other in the natural order of things. From the functional viewpoint, animals are subordinate to humans and are mainly valued for their utility to humans. From the relational viewpoint, the core domain is the interpersonal relation between one person and an animal. The holistic viewpoint takes this one step further and holds that animals are our teachers and show us that man and animal are both domains of a greater unity. In a next step, the respondents were invited to give their opinion on their preferred animal disease control strategy, their trust in the government and their views on the justification on the culling of healthy animals during an animal disease epidemic. Furthermore, they gave their views on the killing of healthy animals in general to compare this with their views on the culling.

The results were analysed using cross references and Chi square ($p<0.05$). The following categories were compiled: the category 'animal species' with: 'poultry', 'cloven-hoofed animals', and 'other species' (including all other animal species not necessarily backyard animals, such as horses, rabbits, and companion animals), the category 'reasons to keep animals' with: 'breeding', 'sport', 'commercial', 'grazing', 'company', 'consumption', 'shelter', and 'therapy', the category 'typology' with: 'biocentric', 'relational', 'functional' and 'holistic', the category 'gender' with 'male' and 'female', the category 'age' with: '31-40', '41-70', and '71-90' (these age categories were compiled on the basis of the age spectrum of the respondents), the category 'highest education level' with: 'primary education', 'lower to middle secondary education', and 'higher secondary education to university degree', and the category 'yes/no experienced an animal disease epidemic'. This included the culling of one's own animals, indoor keeping, transport restrictions or other related matters during previous outbreaks of classical swine fever, foot and mouth disease and highly pathogenic avian influenza.

Results

The nature of the practice and the human animal bond

The respondents were predominantly male, and between 41-70 years of age, with 33% in the '*51-60'* age group. The education level was quite high, with most respondents with a higher education level or university degree (54%). Of the respondents, 86% kept poultry, 44% kept cloven-hoofed animals, and 29% kept other animal species. Usually more than one animal species was kept. Most men and women kept poultry. More women kept cloven-hoofed animals and other animals than men (23%). Table one gives the results of the demographic data, species kept and gender differences.

Table 1 Demographic data and gender differences in column percentages

Categories	subcategories	Total	N	Male	N	Female	N
		100	214	73	157	27	57
Age	31-40	4	9	5	8	2	1
	41-70	80	171	84	132	68	39
	71-90	15	32	11	17	28	16
Highest education level	Primary school	11	24	8s	13	20s	11
	Lower to middle secondary education	34	73	37	58	27	15
	Higher secondary education to university	54	116	54	85	54	31
*Species	Poultry	86	184	88	138	79	45
	Cloven hoofed	44	94	37s	58	65s	37
	Other animals	29	62	23s	36	46s	26

*s=significant p<0.05 * Categories not mutually exclusive. Results rounded off*

Table two gives the reasons to keep backyard animals. The animals were kept in the first place for company, followed by breeding and sports. Company was the main reason for respondents between the age 41 and 70, and for respondents with a higher education or university level. More men (66%) kept poultry for company than women (34%). but the *relative* contribution of women in this category is significantly higher; in absolute numbers this is 60 men out of 137 and 31 out of 45 women keep poultry for company. Breeding was performed in all three species categories. The reasons for breeding were to preserve a rare species from being extinct, to breed a fancy species, or to return an Old-Dutch breed to its original state and region. Sometimes, the animals were merely bred for the pleasure of having young animals around the house. Often the breeders bred for the purpose of their sport and to present their animals at special shows. Breeding was dominated by the male respondents in all three species categories, and was the highest in the '*poultry*' group (90%). Sport includes all the recreational activities with animals, such as shows, horseback riding, pigeon racing, etc. Sport was performed substantially more with poultry (shows for special breeds) and with animals from the 'other

Table 2 Reasons to keep animals for the three species categories in column percentages

Reasons/species	Poultry*	N	Cloven-hoofed*	N	Other species*	N
Company	50	91	58	54	61	38
Breeding	37	68	30	28	18	11
Sport [1]	21	39	3	3	32	20
Consumption	20	36	12	11	2	1
Grazing	4	8	32	30	3	2
Shelter	1	2	2	2	3	2
Therapy[2]	1	2	2	2	3	2
Commercial	0	0	4	4	2	1

[1] Animal shows, horseback riding, pigeon races etc. [2]For instance green care farms

** Categories not mutually exclusive Results rounded off*

species' group (e.g. jumping and dressage for horses and ponies): 21% and 32% respectively, than with cloven-hoofed animals (3%). Most had experienced an animal epidemic (66%, of which 89% had experienced by the highly pathogenic avian influenza epidemic).

Most respondents, both men and women, had chosen the biocentric view. The women scored the relational view and the holistic view higher. The men scored the functional view higher. Figure one shows the distribution between the typology views and the differences between the men and the women.

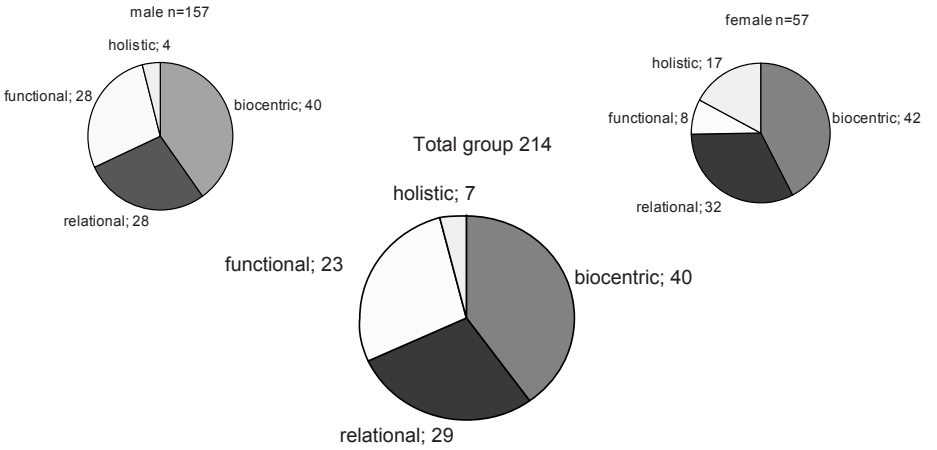

Figure 1 Gender differences in the choice of preferred typology in percentages

Animal disease epidemics and the culling of healthy animals

Most respondents did not consider culling justified (89%). The respondents who did not consider this justified stated that when taking preventive measures healthy animals were not considered a risk factor (87%), healthy animals were considered to have a right to life (45%), culling healthy animals will lead to emotional problems with the keepers (39%), and healthy animals can still be used for the food

production (26%). The 11% who considered it justified to cull healthy animals supported their opinion that the culling was necessary to protect the export position of a country, but only production animals should be culled. Furthermore, it was stated that these animals can be carrier of the disease (50%). Lastly, 9% pointed out that government is a democratically chosen institute, therefore representing the interests of society as a whole.
The respondents were asked about their preferred prevention and control strategy. A percentage of 60% of the respondents was in favour of preventive vaccination for susceptible animals (23% made an exception for wild animals). A percentage of 32% preferred a strategy to have infected animals culled and to give other (susceptible) animals an emergency vaccination to live. For highly pathogenic avian influenza (table four), which can be hazardous to human health and can even be lethal, 68% the respondents chose a combination of preventive measures, especially less animal transports (79%), protection of people against the disease (48%), and training slaughter men (27%). In an outbreak of this disease, a combination of measures was chosen: indoor keeping (76%), transport restrictions (67%). In the infected area infected poultry should be culled.

Killing animals
A majority of the respondents (90%) considered it acceptable to kill healthy animals, but only for specific purposes. Most acceptable was the food production (95%), followed by human health hazard (50%), animal welfare (39%), to stop a contagious animal disease (29%) surplus animals (27%). The respondents who did not find it acceptable to kill healthy animals supported this by the argument that healthy animals in general have a right to life (80%).
The respondents were asked about their trust in the government. A majority of 64% had indicated that their opinion about the government had changed because of to the epidemics. They had lost faith in the government and/or suspected that the government had used the epidemics to reorganise the livestock sector.

Discussion

The assumption of our study was that for successful future prevention and control policy of contagious animal diseases one needs to obtain more insight into the nature of the different animal practices involved. One should not only know what a practice is about: why are the animals kept, what animals are kept and who are the keepers. One should also know whether the nature of a practice has consequences for the justification of a policy.
The respondents and the interviewees were representatives of interest organisations for backyard animal keepers. They may not have been completely representative, because most backyard animal keepers are not organised. These organisations were

contacted and a call for participation was sent out through the Internet. This method was most likely to attract people who were already interested about issues concerning backyard animals, and may have already formed an opinion about future strategy for animal diseases. Furthermore, the organisations contacted usually represented the interests of breeders, because breeders require pedigree registration, exchange of animals and information, and like to participate in organised activities, such as shows or sport.

The decision to keep backyard animals at a certain moment in life may find its basis in childhood or can be a way to appreciate rural life. Most interviewees (76%) were born and brought up in the country, and had often kept livestock animals and pets as childhood companions. This was the main reason why, as an adult, they decided to keep animals. Other studies (Endenburg 1994, 1995 Miura et al. 2002 Fidler 2003) found a positive association between childhood pet-keeping and current favourable attitudes to animals. Some interviewees though, had moved from the city to the countryside and kept animals as part of their new life in the rural area. On the whole, keeping backyard animals was seen as a way of life, which was explained as the experiencing of nature through animals in a rural environment. This finding was supported by Sijstema et al. (2005).

The majority of the respondents were men and were older, with a higher education, and who mostly kept poultry. This does not necessarily mean that this is a fair description of this practice, because, as said, the participants may not have been completely representative. These results are partly supported by those of Treep et al., (2004) and Sijtsema et al., (2005), but Treep et al. found that pigeons were the species kept by most, followed by poultry, and the respondents in the study of Sijtsema were on average 35 years of age, and 64% female. The dominant representation of men in our study could be explained by the fact that the participants in our study were for a part contacted through the membership of an organisation, which were usually clubs for breeders and breeding is mostly performed by men. With respect to age and education; backyard animals need sufficient outdoor space, are time-consuming and - dependent on the species - may be expensive in terms of feed, veterinary care, housing and otherwise. People who have settled down and have a sufficient income, which may be more prevalent in people who are somewhat older and with a higher education, may have enough time, space and means to finance this hobby. Poultry as the most popular species kept, does not need much space, and can even be kept in an urban area. In keeping poultry is not as expensive as cloven-hoofed animals or horses. This in part could account for their popularity.

The human-animal bond in this practice is relational as well as functional. Company is the main relational reason to keep backyard animals. The interviewees support these findings and describe the essence of the bond with their animals in terms of ‘contact’, ‘company’, ‘care’ and ‘attachment’. Backyard animals serve a functional

purpose as well; for breeding, grazing, sporting, providing animal products, or for therapeutic reasons. These functional qualities do not serve a commercial purpose though, and are another way to interact with animals.

When comparing the nature of the backyard animal practice and its specific human-animal bond to the commercial livestock sector (Holloway 2000, 2001, Wilkie 2005), and to the keeping of companion animals (Eddy 2003 Rollin 2003 Copeland 2003 Sanders 2003 Hart 2003 Lawrence 2003 Endenburg et al. 1994), backyard animals are positioned somewhere between the two. Breeders of backyard animals are closer to commercial farmers than non-breeders in their functional attitude to their animals, but commercial farmers breed to sell animal products, and non-commercial breeders usually wish to restore or improve a special breed, for sport or for the biodiversity in a certain area. At the same time, backyard animals are close to companion animals, due to the relational nature of the contact, which is personal and individualised. Furthermore, backyard animals, as well as companion animals, are usually not killed for food. Still the status of backyard animals is lower, which is also described by Sijtsema et al. (2005), and can be explained by the fact that companion animals live in the house, and are therefore included into the innermost circle of the family. This role of physical proximity is described by Lookabaugh Triebenbacher (1999) and Shore et al (2006), who found that close proximity of an animal intensifies the attachment.

The biocentric view was chosen the most often. This view emphases the interconnectedness of humans and other animals in a natural system. It describes a relationship with animals which is still slightly hierarchical, but respects that animals have their own place in the natural world, independent of their use to humans. Humans and animals are both indispensable domains in nature. But even though animals have an acknowledged value in their own right, humans are still allowed to use them for their own purposes, provided the animals' species-specific needs are acknowledged. In this respect, keeping backyard animals is allowed as a way to interact with the living nature.

These findings are reflected in a study by De Groot et al. (2003) among 172 inhabitants of a small town in The Netherlands. De Groot et al. propose three types of relationships between people and nature: 1) man the adventurer and explorer of nature 2) man responsible for nature and 3) man the participant in nature. This spectrum of typologies moves from an anthropocentric to an ecocentric view and is comparable to the typologies used in our study. De Groot found that the second typology was predominant, and the third typology had gained more ground than the first. These results show that in this view, animals and other natural domains are all part of nature and are therefore equal partners. This view describes a new relationship with nature; i.e. moving away from a wish to master nature to a more participatory or interactive bonding, and shifts from a functional use to a more relational experiencing of nature.

The functional type was chosen by more men and by the breeders, and highlights the functional qualities of animals in a hierarchical relationship with humans. This functional appreciation was reflected in a high acceptability of killing healthy animals for functional reasons.

The holistic view is positioned at the other end of the spectrum. Respondents with a holistic view, though their number was very low, held a very high appreciation for the company of animals, through which the (spiritual) connection with the natural world is felt. The functional aspects of animal keeping were valued very low. Furthermore, killing healthy animals was considered not acceptable by one third of these respondents, which is the highest percentage.

The justification to kill healthy animals is the result of a weighing of interests of animals and humans. In this study, one of the objects was to clarify which reasons to kill were considered justified in this particular animal practice. The killing of animals for food was supported by most. One of the criticisms against the culling and destruction of production animals was that the culling of these animals, which served a purpose as the providers of food, was a waste of a valuable food source. Even though a percentage of 92% of the interviewees and 95% of the respondents deemed it acceptable to kill animals for consumption, this did not necessarily include one's own animals. Sijtsema et al. (2005) found that only 25% of the respondents (N=682) did eat their own animals. In our study, 20% of the respondents consumed their own poultry products, and 12% consumed products of their cloven-hoofed animals.

In a study performed by Rutgers et al. (2003) in 2001, among 1939 randomly selected Dutch respondents, the opinion about the killing of healthy animals was studied. A percentage of 84% disagreed with the culling of healthy animals in an animal disease (for economic reasons). This could be explained by the fact that most respondents had experienced an animal epidemic, be it personally or indirectly. This means that experience may lower the acceptability of culling healthy animals. One agreed with killing an animal when it is ill. This explains that an infected animal may be killed but healthy animals not. Killing for human health reasons was acceptable by 50%. In an animal disease which may be harmful to humans as well, as with the H5N1 highly pathogenic avian influenza virus (bird flu), human health interests may override animal life. However, the wording of the questions in the questionnaire was rather general, and did not specify whether a human health risk entailed mild or serious consequences, such as eye infections or lethal effects. Had a more detailed description of the human health risks been given, then the justification of culling would probably have been more dependent on the risks involved. To conclude, killing animals as such is not rejected but shows that sound justification is needed and that people's convictions about what exactly is justified is context dependent and change over time.

The male and (relatively more) female respondents kept their animals first for company. The male respondents kept poultry for breeding and company alike. The preference for poultry by men could be that men may choose an animal species on the basis of the possible activities one can perform with this species, and poultry is the species kept the most for breeding and sport, and is relatively easy to keep. The higher appreciation for company by the women may explain their preference for cloven-hoofed animals and animals from the 'other' category. Being mostly mammals, these animals are possibly easier to identify with, and may be more capable of reciprocating the affection, which is suggested by Sijstema et al. (2005).
The men chose the biocentric view the highest, but also held a more functional view of their animals. The women on the other hand valued the functionality of the animals the least, and preferred all other forms of relations with animals: either on an individual basis or as part of a natural or spiritual unity. One can conclude that for the female respondents the human-animal bond was mainly relational, and for the men it was a combination of a relational and functional bonding.
Other studies described gender differences as well (Hills 1993 Herzog 1991, 2007 Fidler 2003). The authors describe the attitude of women as based on identification with the animal and empathy for their treatment, while the valuation by men seemed to be more instrumental.

Implications for policy
Backyard animal keepers as an emerging animal practice in the Dutch rural area have interests which are separate from those of commercial farming. Both groups demand certain autonomy to run their practice as they see fit and to care for and treat their animals in accordance with the human-animal bond specific to this practice. This situation has a potential to cause friction when policy choices have to be made at a level that included non-commercial as well as commercial keepers. From a liberal point of view this autonomy to act should be respected with a government intervening only to prevent harm done to others. This approach though is no so clearly justifiable from a moral point of view. These animal practices exist next to each other but differ with respect to the nature of the practice, the human animal bond and with different outlooks on the moral responsibilities towards their animals. This requires an approach that does justice to all involved (Meijboom 2009), and has become a matter of urgency since the epidemics have already led to a breach in trust between the government and the keepers. Would justice be done if a government were to base its policy on an equal distribution of a *risk* of harm? In that case then the burden and the benefit would be carried by both practices. Then one should know how the different practices define risk. For instance, a potential economic setback is a risk for farmers, but a non-vaccination policy is a risk for backyard animal keepers who are denied the choice to protect their animals from a serious disease by immunisation. Second, the acceptance of a certain type of risk can

be fundamentally wrong to one because it may touch upon deeply felt moral convictions, but not to others. For example, farmer and their animals find themselves to have an important function in society as providers of high quality food. The reason to be of the animal is to live the natural life of a production animal (Stafleu 2004). It is the conviction of these farmers that it is morally justified to keep and kill animals for food. Culling and subsequently destroying these animals then is morally wrong (Van Haaften and Kersten 2002) because the purpose of their existence has been thwarted. This conviction takes its point of view from the individual animal that lives to reach its specific goal in life. To other farmers the stamping-out strategy was the best way to resume business as usual: a disease is swiftly eradicated and food can be provided again (Van Haaften and Kersten 2002). In this view animals have value as a macro-economic unit. Risking the sector's and the country's interests then is considered wrong. Backyard animal have a different value as living beings, companions or as rare breeds. Therefore, it is clear that economic risks did not so easily convince their keepers as a sound reason for culling.

In the interviews the interviewees expressed serious doubts about the role of backyard animals in epidemics. This was not only based on the nature of the practice, which does not entail intensive transport and contact structures between animals, but also on the idea that backyard animals are more robust than production animals. They stated that inbreeding, intensive keeping and an underdeveloped immune system due to the use of antibiotics and little exposure to natural pathogens has rendered production animals a more susceptible group. A recent study performed by Bavinck et al (2009) showed that the contribution of backyard poultry flocks during the highly pathogenic avian influenza outbreak in 2003 in the Netherlands was marginal. This was due to the fact that these flocks were considerably less susceptible to infection than commercially kept poultry. Bavinck et al. pointed out that backyard poultry can just as easily be infected when in contact with the virus. The susceptibility of infection was dependent on a complex of other determinants, such as the contact structures, and not on the robustness of backyard animals. It is important to know about the factual risks involving backyard animals and about the *perception* of the keepers about these risks, because this influences their support for a certain strategy.

Conclusion

In the current study the backyard animal keepers were predominantly male, and between 41-70 years of age. The education level was quite high.

Most keepers kept poultry. The animals were kept in the first place for company, and in the second place for breeding. More men than women kept animals for breeding purposes.

Most respondents, both men and women, had chosen the biocentric view on animals and nature. The men had a functional and relational view and more women than men had a relational view.
Most respondents did not consider culling of healthy animals in an animal disease epidemic justified A percentage of 60% of the respondents was in favour of preventive vaccination.
A majority considered it acceptable to kill healthy animals, but only for specific purposes. Most acceptable was the food production.
A majority of the keepers had indicated that their opinion about the government had changed because of the epidemics.
The keepers had a personal relation with their animals which resembles that of companion animals.
Backyard animals are valued for their company, their value as a rare, Old-Dutch or special breed, their visibility in the countryside, the contribution of certain breeds to the biodiversity, to a region with cultural-historical value or in a nature reserve. Keeping backyard animals is a highly valued way of life to connect with nature and its inhabitants.

Recommendation

It is recommended to acknowledge the differences between the livestock and the backyard animal practices in the decision-making process for future policy.

Acknowledgements

We would like to thank Prof. dr. I Weeda for her valuable contribution to the development of the questionnaire and ing. FA Steenstra, and dr. ir. SJ Oosting, for their advice with respect to the statistical analysis of the survey.

References

Armstrong SJ, RG Botzler 2003 General introduction on animal ethics, The Animal Ethics Reader. Routledge 1-10

Bavinck V, A Bouma, M van Boven, M Bos, E Stassen, A Stegeman 2009 "The role of backyard flocks in the epidemic of highly pathogenic highly pathogenic avian influenza virus (H7N7) in the Netherlands in 2003", Preventive Veterinary Medicine 88 247–254.

Berentsen PBM, AA Dijkhuizen, AJ Oskam 1991 A dynamic model for cost-benefit analyses of foot-and-mouth disease control strategies. Preventive Veterinary Medicine 12 (2-13) 229-243

Cohen NE, EN Stassen MAPM van Asseldonk 2007 Social-ethical issues concerning the control strategy of animal diseases in the European Union: a survey. Agriculture and Human Values 24 (4) 499-511

Copeland MW 2003 The defining difference: response to "What is a pet?" Anthozoös 16 (2) 111-113

Dam F van, M Jókövi, A van Hoorn, F Heins 2003 Landelijk wonen. Ruimtelijk Planbureau Den Haag. Rotterdam, NAi Uitgevers.

Eddy TJ 2003a What is a pet? Anthozoös 16 (2) 98-105

Eddy TJ 2003b The challenge: reflections on response to "What is a pet?" Anthozoös 16 (2) 127-134

Endenburg N, H 't Hart, J Bouw 1994 Motives for acquiring companion animals. Journal of Economic Psychology (15) 191-206

Endenburg N 1995 The attachment of people to companion animals. Anthrozoös, 8 (2) 83-89.

Fidler M 2003 Animal status as a response to pet owner experience. Anthrozoös, 16 (1) 75-82

Groot WT de, RJG van de Born 2003 Visions of nature and landscape type preferences: an exploration in The Netherlands. Landscape and Urban Planning, 63 (3) 127-138

Hart LA 2003 Pets along a continuum: response to "What is a pet?" Anthrozoös, 16 (2) 118-122

Herzog HA Jr, NS Betchart, RB Pittman 1991 Gender, sex role orientation, and attitudes towards animals. Anthrozoös (30) 184-191

Herzog HA 2007 Gender differences in human-animal interactions: a review. Anthrozoös 20 (1) 7-21

Hills AM 1993 The motivational bases of attitudes towards animals. Society & Animals 1 (2) 111-128

Holloway L 2000 Hobby-farming in the UK: producing pleasure in the post-productivist countryside. Anglo Spanish Symposium on Rural Geography, University of Valladolid, Spain.

Holloway L 2001 Pets and protein: placing domestic livestock on hobby farms in England and Wales. Journal of Rural Studies 17 (3) 293-307

Kuppen JFH 2009 Democratizing animal biotechnology. Inquiring and deliberation in ethics and governance, thesis, Free University, Amsterdam, the Netherlands

Janssen LHJM, VR Okker, J Schuur 2006 Welvaart en Leefomgeving, een scenariostudie voor Nederland in 2040 The Hague, Centraal Planbureau, Milieu- en Natuurplanbureau, Ruimtelijk Planbureau.

Lawrence EA 2003 Some observations on "What is a pet?" Anthrozoös 16 (2) 123-126

Lookabough Triebenbacher S 1999 Re-evaluation of the companion animal bonding scale. Anthrozoös 12 (3) 169-173.

Miura A, Bradshaw S, H Tanida 2002 Childhood experiences and attitudes towards animal issues: a comparison of young adults in Japan and the UK. Animal Welfare 11 (4) 437-448

Raad voor Dierenaangelegenheden August 2003 Wet- en regelgeving omtrent hobbydieren. The Hague, RDA 2003/02.

Raad voor het Landelijk Gebied & Raad voor Dieraangelegenheden December 2003 Dierziektebeleid met draagvlak, advies over de bestrijding van zeer besmettelijke dierziekten, deel 1, advies. RLG 03/8 RDA 2003/08.

Raad voor het Landelijk Gebied & Raad voor Dieraangelegenheden January 2004 Dierziektebeleid met draagvlak, advies over de bestrijding van zeer besmettelijke dierziekten, deel 2 Onderbouwing van het advies. RLG 03/8 RDA 2004/01.

Raad voor het Landelijk Gebied August 2001 Voor het kalf verdronken is. Advies over de toekomst van de dierhouderij in Nederland (Advice on the future of animal keeping in the Netherlands) (Utrecht, RLG 01/6).

Rollin BE, L Rollin 2003 Response to "What is a pet?" Anthrozoös 16 (2) 106-110.

Rutgers LJE , JM Swabe, EN Noordhuizen-Stassen 2003 Het doden van gehouden dieren Utrecht, Utrecht University.

Sanders CR 2003 Whose pet? Comment on Timothy Eddy, "What is a pet?" Anthrozoös 16 (2) 114-117

Shore ER, ML Riley, DK Douglas 2006 Pet owner behaviours and attachment to yard versus house dogs. Anthrozoös 19 (4) 325-334

Sijtsema S, S Kroon, S. van der Wijk-Jansen, E van Dijk, G van Tacken, B de Vos 2005 De kloof tussen de hobbydierhouders en overheid; over passie voor dieren en perceptie van wet- en regelgeving die voor landbouwhuisdieren gelden. The Hague: Landbouw Economisch Instituut.

Stafleu, FR, CC Lauwere, KH de Greef, S Dudink Boerenethiek. Eigen waarden als basis voor een 'nieuwe' ethiek. Een inventarisatie, report Utrecht University, Ethics Institute.

Treep L, T Brandwijk J Jolink 2004 Verkenning Hobbydierhouderij, The Hague, ECLNV report 255

Velde H te, N Aarts, C van Woerkum 2002 Dealing with ambivalence: farmers' and consumers' perceptions of animal welfare in livestock breeding. Journal of Agricultural and Environmental Ethics 15 (2) 203-219

Waelbers K, F Stafleu, FWA Brom 2004 Not all animals are equal. Differences in moral foundations for the Dutch veterinary policy on livestock and animals in nature reservations. Journal of Agricultural and Environmental Ethics 17 (6) 497-514

Warren MA 1997 Moral status: obligations to persons and other living things, Oxford: Oxford University Press

Wilkie R 2005 Sentient commodities and productive paradoxes: the ambiguous nature of human-livestock relations in Northeast Scotland. Journal of Rural Studies 21 (2) 213-230.

Ziel T van der 2003 Verzet en verlangen Wageningen University: Wageningen, The Netherlands.

Fundamental moral attitudes to animals and their role in judgement

An empirical model to describe fundamental moral attitudes to animals and their role in judgement on the culling of healthy animals during an animal disease epidemic

4

Fundamental moral attitudes to animals and their role in judgement
An empirical model to describe fundamental moral attitudes to animals and their role in judgement on the culling of healthy animals during an animal disease epidemic

NE Cohen FWA Brom EN Stassen

Published in Journal of Agricultural and Environmental Ethics 2009, 22, 341-359

Abstract In this paper we present and defend the theoretical framework of an empirical model to describe people's fundamental moral attitudes (FMAs) to animals, the stratification of FMAs in society and the role of FMAs in judgement on the culling of healthy animals in an animal disease epidemic. We used philosophical animal ethics theories to understand the moral basis of FMA convictions. Moreover, these theories provide us with a moral language for communication between animal ethics, FMAs and public debates.
We defend that FMA is a two-layered concept. The first layer consists of deeply felt convictions about animals. The second layer consists of convictions derived from the first layer to serve as arguments in a debate on animal issues. In a debate, the latter convictions are variable, depending on the animal issue in a specific context, time and place. This variability facilitates finding common ground in an animal issue between actors with opposing convictions.

Introduction

From 1997 to 2003 three major animal disease epidemics: classical swine fever, foot and mouth disease, and highly pathogenic avian influenza swept over Europe, leaving behind millions of infected and healthy animals culled and numerous animal keepers traumatized. What had happened? In the early nineties the European Union adopted a non-vaccination strategy to control these highly contagious diseases. Stamping out a disease, which means culling infected and healthy animals within a radius of 1-3 kilometres from the source of the infection, was from a financial-economic perspective, preferable to vaccination (Mepham 2004 Woods 2004 Koninklijke Nederlandse Akademie van Wetenschappen 2002). It stopped the disease infecting other animals, and enabled the member states to quickly regain their "disease free" status. The latter was imperative to resume international trade in animals and animal products. The rationale behind the stamping-out policy was a weighing of economic pros and cons with respect to the international trade in animals and animal products. The financial setback for the individual animal keepers was outweighed by the benefit to the trade position of a country as a whole. Furthermore, highly pathogenic avian influenza presented an additional zoonotic risk, which means that the virus can cause eye infections in people who had been in close contact with infected animals. Some highly pathogenic avian influenza strains can even be lethal to people, and indeed people had died from the disease, with one casualty in the Netherlands.

In the Netherlands and the United Kingdom, the stamping-out strategy was the cause of trauma and major public resistance (United Kingdom: Anthony 2004 Murphy-Lawless 2004 Mepham 2001, 2004 Crispin 2002 Laurence 2002 Farm Animal Welfare Council 2002; Cumbria Foot and Mouth Disease Inquiry Panel 2002; Institute for Health Research 200; Cohen et al. 2007 The Netherlands: Huirne et al, 2002 Van Haaften and Kersten 2002 Raad voor het Landelijk Gebied and Raad voor Dieraangelegenheden 2003 and 2004, Nederlandse Vereniging tot Bescherming van Dieren 2004 Van den Berg 2002). This resistance not only came from the animal keepers, but also from the general public that had been confronted with footage of burning pyres (in the United Kingdom), animal welfare problems, and the frustration and anger of those directly involved. The resistance was based on a number of issues. The focus of our study is on those issues that touch on people's basic moral convictions about animals, therefore we will only give an account of the issues relevant for the study.

In the process a great number of animals were culled, mostly healthy animals, and animals that were kept for non-commercial reasons. The scale and the visibility of the culling increased the feelings of unrest, which were based on the notion that the lives of these animals should be respected and should not be sacrificed for economic purposes. The culling and destruction of production animals was severely

criticized because the natural course of life of a production animal, i.e., to produce food for the nation, was thwarted (Stafleu et al. 2004). The movement restrictions, transport, and the culling were the cause of a range of animal welfare problems (Crispin et al. 2002; Laurence 2002; Van den Berg 2002; Nederlandse Vereniging tot Bescherming van Dieren 2004 Van Velzen and Dekker 2003 Van den Berg 2002). Animal keepers could no longer give adequate care to their animals, animals that were not fit for transport (e.g., pregnant animals) were still transported to slaughterhouses, and the slaughter-men were not equipped to deal with so many animals to be culled within a very short time in conditions that were far from ideal. Many livestock farmers were struck hard: not only because their animals were the financial basis of their business, but also because they were powerless to care for their animals properly and to stop the culling of animals they had sometimes bred with for many generations. Non-commercial animal keepers argued that the control strategy was not applicable to backyard animals, special or rare breeds, or zoo animals. These animals were not kept for commercial reasons and were usually not exported or kept for food. Furthermore, the relationship with these animals was to a large extent personal and not professional.

The scale of the public outcry showed that stamping-out for economic reasons was no longer compatible with society's moral convictions about the right treatment of animals (Noordhuizen-Stassen et al. 2003). Anthony (2004) concluded that competing value frameworks were at work. This meant that economic considerations were given undue emphasis over other values of a moral kind, such as welfare issues. We found that the debate concentrated on three moral values: the intrinsic and relational value of an animal's life, the duty to treat animals well (to care for their health and well-being and to protect them against harm), and the autonomy of the animal keepers. It became clear that these values were not the priority values of the authorities. First, to the authorities, the value of an animal's life was interpreted as its economic value (to a farmer, the livestock sector, or the country). The interests at stake were basically economic, therefore the loss of a number of animals compared to the benefits for the sector and the country as a whole, was justified in an economic sense (Mepham 2001). To the opponents, the value of an animal's life meant the value of the animal in its own right as a living being and the value of the personal and emotional relationship between people and their animals. The morally laden terms "right to life" or "respect for life" were used to express this opposition.

Second, an important issue was the "duty to treat animals well" (Crispin et al. 2002), which for the animal keepers was the core responsibility to their animals. This was in their view a moral duty: people deliberately choose to keep and confine animals, and therefore are responsible for their health and well-being. In their view they were forced to act against this moral duty, because economic duties to the nation prevailed.

Third, "autonomy" to the individual keeper or animal practice, meant to be at liberty to act according to one's own convictions to properly care for and protect their animals as they see fit. To the authorities this was a value that could be outweighed by national interests (Meijboom et al. 2009). This justified the decision to take control of the private element of the animal keepers, rendering them powerless to stop the slaughter-men entering their premises and harming and culling their animals. At a different level, animal keepers had been denied the choice to vaccinate their animals to protect them against these diseases.

This resistance was not about values per se, (that people have a duty to treat animals well was not contested as such), but about the choice and relative weight of values in this specific context. People felt that these values had been overruled by a government that did not acknowledge the fact that other values were at stake. Rather, the resistance revealed that the government had left a number of issues out of the equation as not relevant. First, it had not taken into account the diversity of animal practices with a diversity of human-animal relationships specific to these practices. The rural area is no longer dominated by livestock farmers, but now includes other animal practices, such as backyard animal keepers, animals in nature reserves, recreation with animals (such as horseback riding), and care farms. In these practices, the human-animal bond is personal as well as instrumental. Second, the policy had failed to do justice to the dynamics of people's moral convictions about animals. The government had based its policy on (economic) values that were no longer sufficient justification for the culling of millions of animals (Noordhuizen-Stassen et al. 2003).

The opposition had transcended the interests of those directly involved and had become a general issue in society as a whole, because it had touched upon very basic convictions about animals. In a pluralistic society like the Netherlands, many convictions may exist about animals. Despite that, there are convictions that are shared by most. What was at stake here? Had a shift in moral convictions taken place in different animal practices and was this the cause of the conflict? The resistance made clear that the duty to treat animals well is still the core value in our shared morality and that it is no longer easily outweighed by financial-economic reasons. It also showed that the value of an animal's life as an intrinsic quality is gaining ground over its instrumental (economic) value. However, the source of the conflict lay in the interpretation and the strength of these values in *this specific context*. Subsequently, there was a difference in opinion on the "right" action to face the epidemics.

Animal conflicts such as these bring opposing convictions to the fore, which are then discussed in the public sphere. In this way, morality and practice keep each other in a dynamic equilibrium. When an animal issue jeopardizes this equilibrium, a government has an important duty to initiate a public debate on the issue. In this debate the moral problem should first be identified. Then a critical discussion is

required to find if shared convictions are still capable of dealing with the issue, or if new morality needs to be developed. The development of new morality in this sense means that changing moral convictions should be reflected in new policy. If a government fails to do so, people will start acting according to their own individual convictions and will no longer abide by general rules, because the latter no longer reflect what they feel to be just. (The Netherlands saw an example of this type of civil disobedience during the highly pathogenic avian influenza epidemic, when many backyard animal keepers kept their animals hidden from the slaughter-men). To understand the driving forces of the debate the government should understand more about the stratification of convictions in a pluralistic society.

Our convictions about animals are deeply rooted in our total belief system, and include everything that is important to us: ourselves, other people, animals and the natural world. Often our ties with our fellow human beings are stronger than those with animals (Posner 2004), which means that we may lend more weight to our obligations to other people than to animals. Also, our ties with animals we have a personal relationship with and which are visibly present in our community (e.g., in contrast with laboratory animals), are likely to be given more weight as individuals, animal friends, or co-citizens. This implies that (most of) our attitudes to animals are ambiguous, because they do not apply to *all* animals *all* the time, and in this friction, the values of animal welfare and life are variable. Yet all together this is not new as in society we make these decisions all the time. The question is what the influence of convictions is on these decisions and how to unify these convictions in the "right" policy. Although moral convictions in themselves are deeply felt, as such they are not a matured framework of morality. Rather, they are a theoretical point of departure. Theoretic convictions develop and become practical when used in a real life situation. They are brought to life, shaped, reshaped, re-valued or solidified in a public debate on a moral issue in a specific circumstance and context. Then, the conviction once again becomes embedded in the moral history of an individual or that of a society. What does this mean? It means that a conviction can exists in a theoretical form and in a practical form, and is best described by the dynamic interaction between the two. The implication is that we should attempt to learn more about people's theoretical convictions, because they do exist in some form and need to be understood, including their stratification in society. However, for a comprehensive understanding of the dynamics of convictions, we also need to learn about their role in a practical animal issue.

We aim to contribute to the public debate by presenting a model to identify fundamental moral convictions (FMA) about animals, to find if there is a stratification of FMAs and to study their role in judgment on animal issues. The model is useful for structuring the debate, and offers a moral vocabulary for understanding and communicating the moral issues at stake.

In the form of a questionnaire the model was used in a number of surveys performed in the Netherlands in 2007 and 2008, among members of the general public, veterinarians, and livestock keepers.

Methodology

We use the term "fundamental moral attitude" (FMA) with reference to people's moral convictions about animals. We chose the word *fundamental* to indicate that it concerns the most basic frame of reference. It is *moral* because it tells us something about the right or the wrong way to treat animals, whose welfare and flourishing can be promoted or harmed by our actions. The word *attitude* to animals is already used in studies to describe people's views on animals and their treatment (Knight and Barnett 2008 Matthews and Herzog 1999 Serpell 2004) and therefore it makes sense to use a term that is already in use. We defined fundamental moral attitude as the fundamental convictions of a person, or a group of people, on the hierarchical position of animals, their value, doing good (to care for and protect), and their rights.

In preliminary studies we obtained more insight into the key issues of the public debate and the values that were at stake, as well as into the more fundamental academic discussions on the moral importance of animals. We drew from four sources. First, in a survey among stakeholders in 25 member states of the European Union (Cohen et al. 2007), we identified the priorities in future prevention and control strategies. Second, we analyzed the key issues in the public debate about the epidemics in the Netherlands and the UK (for the UK: Anderson 2002; Anthony 2004; Crispin et al. 2002; Cumbria foot and mouth disease Inquiry Panel Institute for Health Research 2002; Farm Animal Welfare Council 2002; Laurence 2002 Mepham 2001, 2004 Murphy-Lawless 2004, for the Netherlands: Van den Berg 2002 Van Haaften and Kersten 2002 Huirne et al. 2002 Raad voor het Landelijk Gebied and Raad voor Dieraangelegenheden 2003, 2004 Noordhuizen-Stassen 2003 Van Velzen and Dekker 2003 Cohen et al. 2007). Third, we turned to philosophical animal ethics theories concerning the moral importance of animals. This will be discussed in more detail further on in this section. Fourth, we performed a pilot study in 2006 among 214 non-commercial keepers of backyard animals in the Netherlands and interviewed 24 representatives of this practice. This gave us more insight into the moral vocabulary used by these animal keepers to express their attitudes to animals in general, and the moral dilemmas they had faced during the animal disease epidemics. With the data from this preliminary study we developed the theoretical framework of the model.

The theoretical framework of the model

We identified four *elements* as being relevant in people's attitude to animals in general, namely: hierarchy, value, doing good, and rights. These are the four "pillars" of FMA. Each element consists of a number of *dimensions* (=the moral conviction), which reflect an opinion on the element. Each dimension is supported by a number of *argument*s (=the *why* of a conviction, the "building block" of convictions). FMA is identified and described by the choice of dimensions and by the arguments in support of the dimensions. We will discuss this construction in more detail.

Element one, hierarchy, is about the hierarchical position of humans with respect to animals. This element has three dimensions: humans are superior to other animals, humans and animals are equal, and animals are superior to humans. In Western societies, the hierarchical position of animals seems to be changing. The general view has been that humans are superior to animals. This was justified from a religious, cultural, or evolutionary point of view. Although Christian-Judean religious texts are open to different interpretations, the most common interpretation was that humans rule over animals because animals were not considered to have immortal souls, and because humans were given stewardship over the natural world. The cultural justification is based on the fact that animals have been domesticated and dominated for centuries, and in this historical relationship humans were superior because we use animals for our purposes, and because we have the power to do so (Franklin 2005 Serpell 2004). The evolutionary justification holds that in the course of evolution, humans have become more developed than other animals, especially in mental capacities, granting them a position on top of the evolutionary ladder. (Hyers 2006). The moral justification for a superior position for humans is based on criteria that differentiate between species, for instance rationality, consciousness, or moral agency. Nowadays, there are more people who consider humans and animals to be equal. An equality view is based on criteria that emphasize the similarity between humans and animals, such as both being living beings, or both being part of a natural order. The latter view is inspired by recent scientific studies about the nature of animals and their mental capacities (Bekoff 2007) that reveal that humans and animals share many characteristics. In a holistic view on the natural world, animals are sometimes seen as people's superior teachers to reconnect with nature and our inner selves (De Cock Buning 2009).

Element two refers to the value of animals. Element two consists of two dimensions: animals have value, and animals have no value. For our purposes, value is defined as the appreciation for an animal based on its intrinsic value, its instrumental value to people, its relational value to people, and its functional value for the ecosystem. Over the centuries, animals have already earned appreciation for their usefulness to people (e.g., for food) or in a relational sense (e.g., as companions). Now animals are increasingly appreciated for their role in the

ecosystem, or as intrinsically valuable. The latter means that animals are recognized as having value in their own right as beings with a life of their own, and a purpose in life that is inherent to their species-specific needs.

Element three refers to doing good to animals by caring for their health and well-being, by not harming, and by protecting them against harm. This element consists of three dimensions: the obligation to do good to all animals, the obligation to do good to some animals, and no obligation to do good to animals. This element reflects that people's actions matter to animals, whose welfare and flourishing can be promoted or thwarted by these actions. Animals may have a conscious desire not to be harmed when they can feel pain and emotions. This animal welfare issue is and has always been the core element in criticism on certain animal use (Bentham 1789 Singer 1995). However, not all animal species can feel, and are therefore indifferent to an action. Yet still certain actions can thwart the natural course of their lives (Taylor 1986). Therefore actions, though not necessarily consciously experienced, can still be harmful to an animal.

Element four refers to animal rights, and for our study the focus is on the right to life. Element four consists of three dimensions: all animals have a right to life, some animals have a right to life, and animals have no right to life. The meaning of having rights is that animals are not means to human ends, and should be able to lead their own life, undisturbed by people. Furthermore, having rights means that their interests to live, to flourish, and to be free from suffering do count and should be given due consideration. The issue of animal rights is more debated than animal welfare issues because it takes people's legal and moral responsibility much further (Wise 2004). Some argue that animals lack the relevant features to qualify as rights-bearers, i.e., rational moral agents with a sense of justice and an understanding of, and ability to abide by mutual agreements (Carruthers 1992 Scruton 2000). Others are concerned about the practical implications of giving animals (legal) rights (Posner 2004). Having rights could lead to substantial changes in moral convictions and legislation, on what is considered justified in the use of animals. This element allows for several aspects of rights. For our purpose we chose the right to life, as this is relevant for the debate on the culling of animals in the control of the epidemics. With respect to a right to life, there are differing points of view. According to some, (Taylor 1986 Schweitzer in Warren 1997) life as such has value; therefore killing is a harm done to all living creatures, even if the animal may not be aware of this and merely has an unconscious urge to live. To some, only the killing of an animal with a higher intelligence and consciousness is morally wrong, because these animals may have a concept of life, death and the future. They therefore have a conscious desire to live to fulfil future-oriented desires (Regan 1983 McMahan 2002).

In general, studies on animal issues give information about people's opinions (=the dimensions), but usually not about the moral basis of these opinions: the moral

"*why*" of an opinion (Serpell 2004 Herzog and Dorr 2000 Franklin 2007 Eurobarometer 2007). Knight et al. (2003), and Knight and Barnett (2008) found that the degree of mental abilities of animals were one determinant in people's attitude to animals. The more mentally developed and sentient an animal species is, the least acceptable is its use for human purposes. Those studies provide a first insight into the fundaments of people's convictions, but we aim to get a more comprehensive understanding of FMAs and the '*why*' question.

FMA is a moral concept, because the objects of our concern are animals that matter morally. FMA then rests on morally relevant criteria for whether an animal needs to matter morally, which shape our convictions. These criteria should give information about the "*why*" of convictions in a moral sense: they are the moral "building blocks" of FMAs. To address this, we turned to philosophical animal ethics, because this field is all about criteria for why animals are (or are not) morally important and how these guide our ensuing duties to them (Warren 1997). Religion is another source of moral convictions. This we discuss briefly in the discussion. We chose to restrict ourselves to animal ethics, because religion is not about animals per se, but about the place of humans and animals in creation. We selected criteria that were relevant for our model and divided them into four categories; intrinsic, relational, functional/instrumental, and virtue. Some examples may clarify this. Someone may think that humans are superior to animals (why?), because animals lack rationality (intrinsic). Someone may value animals (why?), because they have an instrumental value (functional) or emotional (relational) value to people. We should be kind to animals (why?), because this makes us better people (virtue). Animals have rights (why?) because they are living beings with their species-specific goal in life (intrinsic). The model gives insight into these building blocks of FMA. We will briefly discuss these criteria.

In a number of theories, one intrinsic criterion or more than one, define the moral importance of an animal. For some theorists, the fact that an animal is a living being is sufficient reason to grant it (certain) moral importance. Albert Schweitzer (Schweitzer in Warren 1997) described his thoughts in his Reverence for Life theory. He stated that the possession of organic life is sufficient for full and equal concern. In his view, all living organisms are capable of experiencing positive or negative sensations. Taylor (1986) does not take this capacity to feel as the basis for concern. In his theory of Respect for Nature, he states that every living being that is goal-oriented and has a good-of-its-own should be subject to our concern. Animals are goal-oriented when they are directed to fulfil their life-cycle through growth, reproduction, and adaptation to their environment. A being has a good-of-its-own when it has needs. Therefore, it is possible to speak of actions that are beneficial to the well-being of this being, or are harmful to it. This concept does not require the being to realize or to care whether something is beneficial or harmful to its good. It

does not need to have a conscious interest in the action. It suffices that the action is in the interest of the being.

All living beings possess life, but only species with a more complex neurological system are considered to be sentient. Sentience means the capacity to feel pain and emotions. Many theories (e.g., Bentham 1789 Singer 1995) are based on the concept of sentience, which dictates that one should refrain from harming a being that is capable of suffering. Nowadays, the definition of sentience is extended to include the capacity to experience well-being (Appleby and Sandøe 2002). From this capacity it follows that a being can *experience* well-being and unwell-being. Sentient beings, therefore, have a conscious interest in not being harmed and in experiencing well-being.

Some animal species possess, besides sentience, higher complex mental, and behavioural capacities. Beings with these capacities have mental states such as a will to live and a concept of life, death, and the future. Regan (1983) describes these animals as subjects-of-a-life. In his view, all subjects-of-a-life should have our full consideration.

In other theories (Scruton 2000 Carruthers 1992 Kant in Warren 1997), rationality takes a core position. In this view, only rational beings with self-consciousness and the capacity to reason are capable of moral judgment. They therefore can be judged morally and held responsible for their actions. These capacities make them "moral agents." In this view, only a moral agent exists as an end in itself and not as a means to an end for others. When one does not accept that animals are moral agents, it follows that animals themselves have no importance. Harming an animal then is wrong only because harming animals is an undesirable character trait, and might abhor other people.

A number of theorists (Warren 1997 and below) reject the idea that one or a number of intrinsic criteria alone determine the moral importance of animals. They argue that we should not disregard the value of a personal, historical, or functional/instrumental bond with people, other animals, and the natural world. The moral importance of an animal is then defined by both intrinsic *and* non-intrinsic criteria. In our study, we investigate whether both intrinsic and non-intrinsic criteria are building blocks of FMAs. Therefore, we included all these criteria in our model. We will briefly describe the non-intrinsic criteria below.

Animals in a human community have always been used and valued for their utility, such as for food production, for their strength as workers, as guardians, or for scientific or recreational purposes. Their appreciation was therefore related to their usefulness to people, which was indeed the reason why animals had historically been included into a human community in the first place. Some theorists, from a more ecological view, value animals as part of a unit: at the level of the species or ecosystem. Animals in their natural environment have an important function in the survival of their species and in the functioning of the ecosystem. Some theories

emphasize this role of species in the ecosystem, and consider this a sufficient basis for consideration (Callicot in Warren 1997 Leopold in Warren 1997 Taylor 1986). Humans should therefore accept that they have responsibilities towards the natural world and its inhabitants.

Other theories emphasize the strength of the relationship between animals and humans in a human social community (Anderson 2004 Noddings in Warren 1997). In this social community, humans and animals have lived and worked together for centuries, often forming personal, emotional relationships. In this interaction, there exists a 'mutual promise': that a person will care for and protect the animal when the animal is able to fulfil its assigned task in the community. In a personal relationship between a human and an animal, the responsibilities to an animal are a function of this emotional bonding. Anderson also points out the historical relationship between humans and animals. Over the centuries, domestic animals have become full members of our human society. In this position, animals have importance based on their historical role in a social community. This means that as well as being based on its own intrinsic characteristics, an animal's value is also based on its personal and historical value to individuals and the human community.

According to Hursthouse (1999) virtue ethics as a guide for moral behaviour is gaining ground. This was also described by DeGrazia (1999) in his article on current developments in animal ethics theory in the 21st century. Virtue ethics focuses on the character traits of a person that are seen to be virtuous, such as charity, honesty, respect, kindness, and doing good to others. But in what way is virtue guidance for moral behaviour, or the "right" action, in a specific situation? Hursthouse suggests that a person's behaviour is the right action if it is what a virtuous person would characteristically (characteristic for virtuous character) do in that situation. With respect to animals, being kind to animals is then not only in the animal's interest, but is also the morally right action. As a person is not born with a sense of what is morally right, one could argue that in the treatment of animals, as in our study, it may be virtuous to strive to become a better (virtuous) person, by letting kindness and doing good prevail over other non-virtuous motives.

Role of FMAs in judgment

To learn not only from the theoretical but also from the practical form of convictions, our second aim is to learn about the role and valuation of FMA convictions in judgment. Furthermore, we want to know whether a person with a certain FMA profile judges differently to someone with another FMA profile. If so, then we need to know what this difference is based on. To this purpose we performed a case-study with four cases, which was included in the model. The cases described the culling of healthy animals in an epidemic that differed in one aspect only, namely the argument in favour of culling. These were veterinary reasons, financial-economic reasons, the protection of human health (eye infections), and the

protection of human life. The arguments against culling reflect the practical form of the theoretical FMA conviction "animals have a right to life" based on; the value of an animal's life, the relevance of a species' intrinsic capacities (highly developed) to distinguish between mammals and birds, the financial value of an animal, the emotional bond between a person and an animal, and virtue (not killing animals is a virtuous character trait). The arguments could be valued with a number between 0-10. For judgment, the arguments in favour and those against can be valued and weighed against each other. As such, we can learn about the relative value of convictions in a case, between the cases, between FMAs and as compared to their value in FMAs. Furthermore, we can determine the turning point in judgment, when a human interest outweighs an FMA conviction.

Results

Table 1 shows the schematic representation of FMA, with the elements, the dimensions, and the arguments that are relevant for a particular dimension. For instance, for element 1 (hierarchy), an opinion that humans are superior to animals (dimension 1) can be supported by the argument 'because animals are not as rational as people' (argument 3). Another example: for element 3 (to do good) an opinion that we should do good to some animals (dimension 2), can be based on animals that have a relational bond with people (argument 10). Of course all arguments can apply in one way or the other to all the elements, but for clarity we chose to include the most relevant ones.

Element 2 serves a slightly different purpose. It tells us whether a shift has taken place from an animal's instrumental value to another value. Therefore there are no arguments in support of the opposite dimension: "animals have no value," because this is not relevant for our purpose.

FMA is determined by the combination of the dimensions of choice and by the numerical valuation of the arguments. With our model, 54 combinations of dimensions (3x2x3x3), therefore 54 FMAs are theoretically possible. The arguments can be valued by a number between 0 and 10, with 0=not relevant for my opinion and 10= very relevant for my opinion.

Table two gives the schematic representation of the case-study about the culling of healthy animals. In each case, arguments against the culling are weighed against arguments in favour of culling. For judgment the choice is disagree / partly (dis)agree / agree with the culling of healthy animals for this human interest. The arguments are numerically valued with a number between 0-10.

Table 1 Schematic representation of FMA

Elements		1 Position			2 Value		3 To do good			4 Right to life		
Dimensions		Humans are superior to animals	Humans and animals are equal	Animals are superior to humans	Animals have value	Animals have no value	Do good to all animals	Do good to some animals	No obligation to do good	All animals have right to life	Some animals have a right to life	Animals have no right to life
Categories	animal ethics criteria											
Intrinsic	1 Life		x		x		x			x		
	2 Sentience	x	x	x			x	x	x	x	x	x
	3 Rationality, consciousness	x	x	x			x	x	x	x	x	x
	4 Moral agency	x	x	x								
	5 Life-cycle of animal	x		x						x		
	6 Animal's urge or will to live	x		x						x	x	x
	7 Animal's future	x		x						x	x	x
Functional	8 Function of an animal (species) in the ecosystem	x	x	x	x		x	x	x	x	x	x
	9 Instrumental utility to people				x			x			x	
Relational	10 Relational human-animal bond				x			x			x	
Virtue	11 To become a better person by being good to animals						x					

The crosses x show which criteria are relevant for a particular dimension. Rationality and consciousness were combined, because both refer to a degree of development of the brain to think, reflect and draw conclusions about oneself or others

Table 2 Schematic representation of the four cases

Case: During an animal disease epidemic, healthy cows and chickens are culled in the stamping-out strategy to eradicate the disease. Do you agree with the culling of these healthy animals, when they are culled:
- Case 1: to stop the disease from infecting other animals
- Case 2: to safeguard the export position of a country
- Case 3: to protect human health (eye infections)
- Case 4: to protect human life

I disagree / I partly agree, partly disagree/ I agree with the culling of these healthy animals for this purpose, because:

Arguments in favour of culling	Rating 0-10
Culling is necessary to stop infecting other animals / to safeguard the export position / to protect human health / to protect human life	

Arguments against the culling	Based on criterion:
An animal's life is valuable; therefore these cows and chickens should not be culled	Life
Chickens are highly developed animals; therefore these animals should not be culled	Mental capacity*
Cows are highly developed animals; therefore these animals should not be culled	Mental capacity
Cows and chickens that are of a special or rare breed should not be culled	Functional value
Cows and chickens that have a financial value to people should not be culled	Utility tor people
Cows and chickens that have an relational value to people should not be culled	Relational value
Culling healthy cows and chickens is a bad character trait; therefore these animals should not be culled	Virtue
Cows and chickens are part of Creation, and therefore should not be culled	Religion

**Refers to a degree of development of the animal to think, reflect and draw conclusions about oneself or others*

Discussion

Reflection on the theoretical framework of the model

We have developed a model that is based on four elements (the pillars), each consisting of a number of dimensions (conviction on the element) and arguments

(the *why* of a conviction). We *defined* FMA by the four elements. We described the *stratification* of FMAs by means of the combination of dimensions. We explained the *why* of convictions by arguments, and differentiated between the FMAs by comparing the *valuation* of these arguments. With this method a maximum of 54 FMAs can be described. We argued that this sufficiently covers the range of FMAs in Western societies. This we based on our analysis of the public and philosophical debates on the use and position of animals in relation to people and on people's ensuing responsibilities. We described the *differences in judgment* between FMAs in a case-study.

The arguments were derived from philosophical animal ethics theories. We aimed to find if theory can provide the tools to describe (the stratification of) FMAs. The preliminary studies gave us a fair insight into the moral dilemmas and the moral vocabulary used to describe these dilemmas. This vocabulary was quite similar to that used in the philosophical academic debates, as both realms ask the same moral questions about the justification for our treatment of animals. If a shared moral language indeed exists then theory, FMAs, and public debate have found a way to communicate with each other, from which the three realms may benefit. The public debate may benefit by using a moral language to facilitate communication between people, to understand what differences in opinion are based on. People with different FMAs may benefit because it enables them to understand the moral basis of each others' values. Philosophical animal ethics may benefit by reflecting on empirical studies, to establish in what way theories can be relevant for the public debate and the description of FMAs. Such reflection can also give an impulse to the development of new theories to better describe the dynamics of animal issues in society. A need for new theory was already recognized by Franklin (2006), who expressed the need for a good theoretical argument to help solidify a cultural change towards a greater concern for animals.

In the cases, we focused on the culling and not on the animal welfare problems or the infringement of autonomy. We think that the former is a more fundamental issue in present day debates: the value of an animal's life in itself. It is an example of shifting convictions about animals. Noordhuizen-Stassen et al. (2003) already found that the killing of animals is no longer justified merely because it serves a human purpose.

The concept of FMA

We defend FMA to animals as a dynamic, two-layered concept that rests on four pillars: hierarchy, value, doing good, and rights. The first layer constitutes the most basic, deeply felt moral convictions about animals. This we defined as the theoretical form of convictions. In a society, these convictions have been shaped over time by numerous social, religious, cultural, technological, and other influences and by more knowledge about the nature of animals (see Marc Bekoff 2007 for his studies about

the emotional lives of animals). In an individual, personal experiences and upbringing further shape one's FMA (Fidler 2003 Miura et al. 2002). Derived from the first layer for use as arguments in a public debate on an animal issue, convictions of the second layer become the practical form of a conviction. For judgment, the values of these practical convictions are weighed against other things we value and against convictions of other people. Convictions from the second layer have either an invariable (the same value as its value for FMA) or a variable (another value than its value for FMA) value, depending on the time and place, and on the specific animal issue in a specific context. For instance, the value of an animal's life can be invariable when weighed against economic interests, but can be variable when human life is at risk. The second layer does not hold the same set of convictions all the time. It consists of convictions that are chosen from the first layer for their relevance in a specific debate. In a different debate other convictions may migrate to the second layer. Nor does it mean that the convictions themselves are variable. It means that their value (their weight in a weighing process) can be variable.
Individuals may hold convictions that have an invariable value. For instance, a person may think that animals have a right to life in every situation at all times. In a society as a whole all values are variable, even the value of human life. It would be impossible to function in a society if all convictions had an invariable value. In such a situation, no solutions could ever be found in a conflict. However, this does not mean that a deeply felt conviction cannot exert a strong influence on judgment. Highly valued convictions from the first layer may ultimately be trumped in the second layer when (a combination of) other highly valued convictions (moral) or interests (not necessarily moral, such as economic benefit) are at stake, but they cannot be so easily outweighed by less essential values. In the debate on the treatment and culling of animals, people drew from FMA convictions from the first layer, i.e., the intrinsic value of life and the right to life (element 2 and 4) and our duty to treat animals well (element 3) as arguments in the debate. The debate then concerned the valuation of these convictions in this particular context.

The dynamics of animal ethics theory, FMAs, public debates, and societal changes
By analyzing current debates, we can get a fair idea about the nature of public morality. We all know about generally acceptable behaviour in society. For instance, cruelty to animals is considered unacceptable in most situations. We propose defining the public (or common) morality as the collective FMA of a society as a whole. Collective FMA is not the same as the stratification of FMAs in society. The latter is the total of FMAs of individuals or groups of people. The former is one dynamic pool of convictions and intuitions that most of us agree upon (e.g., to treat animals well) and that have a variable value in a public debate. The values of collective FMA convictions need to be variable, to bridge differences in FMA

convictions of individuals or stakeholders. A public debate can clarify whether a collective FMA conviction is out of sync with other FMA convictions,

In five steps, we will now discuss the dynamics of animal ethics theories, FMAs, the public debate and societal change with respect to the culling: 1. circumstance and context; 2. case; 3. public debate; 4. outcome; and 5. consequences. We also discuss the input of theory and FMAs in this process. Step 1: Until now, risk assessment and control policies of animal diseases were made in the context of livestock production and trade. The culling of animals was therefore justified on the basis of a cost-benefit analysis rooted in the interests of the sector (Meijboom and Cohen et al 2009). Step 2: Unexpectedly, the issue had ceased to be a problem of the sector alone and had become a case in society as a whole. It had stirred something in society's collective morality that needed to be discussed in the public domain. It had become a case for fundamental criticism on the justification of these policy decisions. Step 3: In the ensuing public debate, the stakeholders´ convictions were tested against each other and against the collective FMA. During this process something happened to these convictions. In a debate, new animal issues confirm and solidify a conviction, or revalue or cause a shift in convictions. In this case, the issue had solidified the collective conviction that "treating animals well" can no longer be so easily outweighed. Furthermore, the intrinsic value of animals had increased against a devaluation of their economic value. Thus, as highly valued arguments they had gained the strength to give the issue its unique focus. These interactions between FMAs give rise to a number of questions. First, were these changes in FMA convictions case-bound or have they become part of the collective FMA in their new value or shape? Have they therefore transcended an individual or group conviction to become a conviction of society? Second, have these convictions kept their new status upon returning to the first layer: do processes in the public debate change individual FMAs? A third question is: do FMAs change due to developments in society or does a particular case of animal use become problematic because our morality has changed? From our case it seems that both had occurred. The impact of the culling on such a massive scale, and the visibility of the crisis had been unprecedented. In that respect it was a new development, which had led to a new moral debate. Also, it had become a problematic case, because after the adoption of the non-vaccination policy, morality had developed further, rendering this policy no longer justifiable. Step 4: The outcome of this debate was a government action to find a new approach to future prevention and control strategies, along with more communication structures between the parties. As such, policy followed and reflected new morality. A government should be aware of these dynamics. This is no easy task, considering the plurality in FMAs. To approach this, a government should look at the second layer to find for each stakeholder, what convictions are valued in the debate and which of these values are variable. Furthermore, a government should know whether new values have become part of

the collective FMA. Mepham (2000b) recognizes the need for a tool for policy makers to understand the dynamics of FMAs. They reflect what is new in our convictions. If these have already migrated to the level of the collective FMA that manifests itself through public debates, then we need policy to solidify them into our legal system. Step 5: The consequence of the debate is that morality has evolved to a different level of appreciation of animals. It will become part of the moral history of FMA and again will be tested in a future animal issue. As a result it will develop further. The variability of the value of convictions allows for these developments.

Some authors (Jonson and Toulmin 1988 Macnaghten 2001, 2004 Mepham, 2000b Posner 2004) state that people's moral convictions are not (only) based on theories of duty and rights, but (also) on moral intuitions and personal experience, in this case encounters with animals. It is likely that an interaction is at play here. Jonson and Toulmin (1988) defend that moral theories manifest themselves at different levels: at the purely intellectual academic level on the one extreme to the practical level on the other. If the latter is true, then animal ethics theories are one of the many inputs that shape theoretical convictions. They may be interpreted to fit the theoretical context of a person's or collective FMA. For example, a theory may propose only one criterion for having rights. In an interpretation this criterion may be necessary but not sufficient and other criteria are taken into consideration as well (the multi-criteria account proposed by Warren 1997). At the second layer, a theory becomes a moral argument. This further explains the usefulness of theory to describe FMA and its dynamics, because it is actually a part of FMA.

Animal ethicists who are interested in the practicability and dynamics of theory and FMAs need to know how and why a theory becomes a moral argument, and whether it has become part of the collective FMA. In this way they can learn about the evolution of morality, and develop new theory in line with societal changes. It is essential to be aware of these changes. Practical moral theory that does not stay tuned to social realities is at risk of isolating itself from the collective morality completely and is then no longer practical or relevant.

Applicability of the model

The validity of the model was tested in a number of empirical surveys. By statistical analysis, we were able to describe FMAs, their stratification, and their roles in judgment. With the numerical valuation of the arguments we were able to identify their importance for a FMA conviction and distinguish between the moral bases of different FMAs, Furthermore, we could identify their relative valuation in judgment. We found that the value of an animal's life conviction (in combination with other arguments) was indeed a core argument against the culling of animals. This confirms Anthony's (2004) analysis of the strength of this conviction in the debate. Therefore, we defend the model's usefulness for our empirical research purposes.

In a next qualitative step the model should be tested in a debate about future animal disease control strategies. Representatives of all relevant stakeholders should be included to do justice to the diversities in FMAs. The aim is to establish whether the model can help structure the boundaries of the debate, stretching from what is morally required (the bottom line) to what is morally acceptable (common ground), using the three values 'value of life', 'duty to treat animals well', and 'autonomy' from the different perspectives of the participants. With these moral tools in hand, a number of potential prevention and control strategies can be selected and discussed for their implications for those involved, including the animals. To this purpose the Ethical Matrix, developed by Ben Mepham, is a useful tool to visualize ethical decision-making and the implications of policy for the actors (Mepham 2000a).

The model can be used to study differences between groups (animal practices, gender, cultures, religions, regional differences, etc.). The structure of the model is adaptable to accommodate other studies. Changes can be made at all levels: the elements, the dimensions, and the arguments, and with respect to the cases. For example, for our study we chose the right to life. This can be replaced by another right, such as the right to be free from suffering. This gives information about the strength of people's obligation for doing good to animals. Although anti-cruelty laws guarantee certain protection against suffering, it does not follow that animal use is prohibited per se. A right to be free from suffering, especially when it is a legal right, is a stronger claim on people and could entail more fundamental changes in our use of animals.

For our study element 2 was structured to study the shift in the valuation (here: appreciation) of animals. In another form, one can learn about the reasons why someone does or does not value animals. This would require a change in dimensions to: all animals have value, because…., some animals have value, namely…., and: animals have no value, because…. Adjustments at the argument level are required to support these dimensions.

At the argument level, alterations are possible, provided that they still reflect the *moral* basis of an opinion. Then alterations can be useful for comparative religion or philosophy of life studies, or between religion-based and non-religion based moral convictions. For instance, one may find that humans are superior to animals because animals are not rational, or because animals lack an immortal soul.

As there are numerous animal issues and because new animal uses pose new moral questions, case studies remain necessary to understand the dynamics of convictions. With new case studies, it is possible to study which convictions have migrated to the second layer and what their value is in relation to other values in other contexts.

One practical application is the use of the model for educational purposes. In international exchange programs, universities bring together students from a diversity of cultures and backgrounds with different attitudes to animals. This difference becomes relevant in the field of animal sciences and biomedical research

that rest on the use of animals. We successfully applied the model as a discussion tool to address the ethical acceptability of animal use for animal experimentation, and the possible culturally-based differences in opinion.

Conclusions

Public debates reveal that opposing moral convictions can be the cause of conflict over an animal issue. In this paper we present and defend a model to describe the stratification of fundamental moral convictions (FMAs) about animals in society. The model identifies the moral basis of these convictions about the position, value, care and protection, and rights of animals. We used animal ethics theories as a moral language to describe FMAs. Furthermore, with the model the role of FMAs in judgment on an animal issue can be clarified. We argue that FMAs are dynamic and diverse and that they change over time. The model can serve to monitor these dynamics of FMAs in the public debate over time. Moreover, it takes the public debate a step further because it helps to answer the *why* of opposing opinions. Finally, the model provides a means of communication between the academic field of animal ethics, people's FMAs, and public debate.

Acknowledgements

We would like to thank Dr. F.L.B. Meijboom for his valuable contribution to the development of the model, Prof.dr. I. Weeda for her valuable contribution to the development of the questionnaire, and S. Greene MSc for editing the manuscript. This article is part of the research project entitled 'New foundations for prevention and control of notifiable animal diseases' that is funded by The Netherlands Organisation for Scientific Research (NWO).

References

Anderson E 2004 Animal rights and the values of nonhuman life. In CR Sunstein & MC Nussbaum (Eds) Animal rights, current debates and new directions. US, Oxford University Press 277-299

Anderson I 22 July 2002 Foot and mouth disease: Lessons to be learned inquiry report HC888, London, The Stationary Office

Anthony R 2004 Risk communication, value judgments, and the public-policy maker relationship in a climate of public sensitivity toward animals: revisiting Britain's foot and mouth crisis. Journal of Agricultural and Environmental Ethics, 17(4-5) 363-383.

Appleby MC, P Sandøe 2002 Philosophical debate on the nature of well-being: implications for animal welfare. Animal Welfare 11, 283-294.

Bekoff M 2007 The emotional lives of animals, New World Library, Novaro, California.

Bentham J 1789 Duty to minimize suffering. In PAB Clark & A Linzey (Eds). Political theory and animal rights London, Pluto 135-137

Berg B van der 2002 Evaluatie van het welzijn van dieren tijdens de mond- en klauwzeercrisis in Nederland in 2001, report Nederlandse Vereniging tot Bescherming van Dieren, Den Haag.

Carruthers P 1992 The animals issue. Moral theory in practice. (United Kingdom, Cambridge University Press).

Cohen NE, EN Stassen, MAPM van Asseldonk 2007 Social-ethical issues concerning the control strategy of animal diseases in the European Union: a survey. Agriculture and Human Values 24(4) 499-511.

Cock Buning Tj de, F Kupper, I Krijgsman, H Bout, J Bunders 2005. Denken over de eigen waarde van dieren in Nederland. Athena Instituut, Vrije Universiteit, Amsterdam.

Crispin SM, PA Roger, H O'Hare, SH Binns 2002 The 2001 foot and mouth disease epidemic in the United Kingdom: animal welfare perspectives. Revue Scientific et Technique International Office of Epizoonotics 21(3) 877-883

Cumbria FMD Inquiry Panel August 2002 Cumbria foot and mouth disease inquiry report, retrieved from www.cumbria.gov.uk on June 2004

Degrazia D 1999 Animal ethics around the turn of the twenty-first century. Journal of Agricultural and Environmental Ethics, 11, 11-129

Eurobarometer 2007 270 / wave 66.1 - TNS Opinion & Social 200

Farm Animal Welfare Council January 2002 Foot and mouth disease 2001 and animal welfare: lessons for the future. Report of the FAWC, London.

Fidler M 2003 Animal status as a response to pet owner experience. Anthrozoös 16 (1) 75-82

Franklin JH 2006 Animal rights and moral philosophy. Columbia University Press 31-52

Franklin A 2007 Human-nonhuman animal relationships in Australia: an overview of results from the first national survey and follow-up case studies 2000-2004. Society and Animals 15, 7-27

Haaften EH, PH van Kersten 2002 Veerkracht. Report of Alterra, no. 539, Alterra, Wageningen.

Herzog HA, LB Dorr 2000 Electronically available surveys of attitudes towards animals. Society & Animals 8(2), 183-190

Huirne, RBM, M Mourits, F Tomassen, JJ de Vlieger, TA Vogelzang 2002 MKZ Verleden, heden en toekomst. Over de preventie en bestrijding van MKZ, report LEI, Den Haag.

Hyers, LL 2006 Myths used to legitimize the exploitation of animals: an application of Social Dominance Theory. Anthrozoös. 19(3) 194-210.

Institute for Health Research April 2002. Evidence submitted to Cumbria foot and mouth disease inquiry. Report Lancaster University

Jonson AR, S Toulmin 1988 The abuse of casuistry. A history of moral reasoning. University of California Press, Berkeley Knight, S, K Nunkoosing, A Vrij, J Cherryman 2003 Using grounded

theory to examine people's attitudes towards how animals are used. Society & Animals, 11(4) 307-327

Knight S, L Barnett 2008 Justifying attitudes towards animal use: a qualitative study of people's views and beliefs. Anthrozoös, 21(1), 31-42.

Koninklijke Nederlandse Akademie van Wetenschappen January 2002 Bestrijding van mond- en klauwzeer, 'stamping out' of gebruik maken van wetenschappelijk onderzoek. Report Koninklijke Nederlandse Akademie van Wetenschappen, Amsterdam, the Netherlands.

Laurence, CJ 2002 Animal welfare consequences in England and Wales of the 2001 epidemic of foot and mouth disease. Rev. Sci. Tech. Off. Int. Epiz, 21(3). 863-868

Hursthouse, R 1999 On virtue ethics. Oxford, Oxford University Press

Macnaghten, P 2001 Animal futures, public attitudes and sensibilities towards animals and biotechnology in contemporary Britain. Institute for Environment, Philosophy and Public Policy for the Agricultural and Environmental Biotechnology Commission

Macnaghten P 2004 Animals in their nature, a case study on public attitudes to animals, genetic modification and 'nature'. Sociology (38)3, 533-551

Matthews S, HA Herzog 1997 Personality and attitudes towards the treatment of animals. Society & Animals 5(2) 169-175(7)

McMahan J 2002 The ethics of killing. Problems at the margins of life. New York: Oxford University Press

Mepham B 2000a A framework for the ethical analysis of novel foods. The Ethical Matrix. Journal of Agricultural and Environmental Ethics 12, 165-176

Meijboom, FLB, N Cohen, EN Stassen, FWA Brom 2009 Beyond the prevention of harm: animal disease policy as a moral question. Journal of Agricultural and Environmental Ethics. Volume 22, 6, 559

Mepham B 2000b "Würde der Kreatur" and the common morality. Journal of Agricultural and Environmental Ethic 13, 65-78

Mepham B 2001 Foot and mouth disease and British agriculture: ethics in a crisis. Journal of Agricultural and Environmental Ethics 14(3) 339-347

Mepham B 2004 Farm animal diseases in context. Journal of Agricultural and Environmental Ethics 17(4-5) 331-340.

Miura A, S Bradshaw, H Tanida 2002 Childhood experiences and attitudes towards animal issues: a comparison of young adults in Japan and the UK. Animal Welfare 11, 437-448

Murphy-Lawless J 2004 The impact of BSE and FMD on ethics and democratic process. Journal of Agricultural and Environmental Ethics 17(4-5) 385-403

Nederlandse Vereniging tot Bescherming van Dieren 2004 Reactie van de Dierenbescherming op de evaluatie van de vogelpestcrisis 2003 n.a.v. het rapport van het Bureau Berenschot en de reactie van het kabinet. Report, The Hague, The Netherlands.

Noordhuizen-Stassen EN, LJE Rutgers, JM Swabe 2003 Het doden van gehouden dieren. Report Utrecht University.

Posner RA 2004 Animal rights: legal, philosophical, and pragmatic perspectives. In CR Sunstein, & MC Nussbaum (Eds) Animal rights, current debates and new directions US, Oxford University Press, 51-78

Raad voor het Landelijk Gebied & Raad voor Dieraangelegenheden December 2003 Dierziektebeleid met draagvlak, advies over de bestrijding van zeer besmettelijke dierziekten, deel 1, advies. RLG 03/8 RDA 2003/08

Raad voor het Landelijk Gebied & Raad voor Dieraangelegenheden January 2004 Dierziektebeleid met draagvlak, advies over de bestrijding van zeer besmettelijke dierziekten, deel 2 Onderbouwing van het advies. RLG 03/8 RDA 2004/01

Regan T 1983 The case for animal rights, Berkeley and Los Angeles: University of California Press

Scruton R 2000 Animal rights and wrongs, London: Demos, third edition.
Serpell JA 2004 Factors influencing human attitudes to animals and their welfare. Animal Welfare (13) S145-1551
Singer P 1995 Practical ethics, Cambridge University Press, second edition.
Stafleu, FR, CC Lauwere, KH de Greef, S Dudink 2004 Boerenethiek. Eigen waarden als basis voor een 'nieuwe' ethiek. Een inventarisatie, report Utrecht University, Ethics Institute.
Taylor, P 1986 Respect for nature, a theory of environmental ethics, Princeton, New Jersey: Princeton University Press
Velzen K van, I Dekker July 2003 Niet ruimen, maar prikken! Hoe Nederland opnieuw massaal gezonde dieren liet afmaken. Report Tweede-Kamerfractie SP The Hague.
Warren MA 1997 Moral status: obligations to persons and other living things, Oxford: Oxford University Press
Wise S 2004 In CR Sunstein, MC Nussbaum (Eds) Animal rights, current debates and new directions. US, Oxford University Press, 19-51
Woods A 2004 Why slaughter? The cultural dimensions of Britain's foot and mouth disease control policy, 1892-2001. Journal of Agricultural and Environmental Ethics 14(3) 341-362

Diversity of convictions concerning animals in Dutch society and judgement on the culling of healthy animals in animal disease epidemics

5

Diversity of convictions about animals in Dutch society and judgement on the culling of healthy animals in animal disease epidemics. A survey.

NE Cohen FWA Brom EN Stassen

Submitted to Anthrozoös 2010

Abstract In this paper the results of a national survey in the Netherlands are presented. The aim was to identify and describe the diversity of convictions about animals in Dutch society. Furthermore, the aim was to describe the role of these convictions in judgement on the culling of healthy animals during an animal disease epidemic.
The survey was performed among 1999 respondents who were representative of the Dutch-speaking population. We identified a diversity of convictions, which were grouped into profiles. Two profiles included most respondents. These were called profile A (50% of the respondents) and profile B (28%). As compared to the B profile, the A profile included more men, were older, lived in smaller communities, and had less contact with animals. The A profile considered humans to be superior to animals, whereas the B profile considered both to be equal. The two profiles shared a number of convictions: i.e., animals have value, people have a duty to care for and protect all animals and all animals have a right to life. These convictions were based on a number of values, such as the possession of life, the ability of animals to feel pain and emotions (sentience), and the importance of animals for the ecosystem. The A profile rated these values (significantly) lower that the B profile. Three smaller profiles C (5%), D (5%) and E (5%) also considered humans to be superior, but were of the opinion that people should do good to *some* animals (C and D) and that *some* animals have a right to life (C and E). The 14 other profiles were each chosen by a very small number of respondents.
The case-study showed that convictions played a role in judgement. Most respondents from the A and B profile partly agreed/partly disagreed with culling healthy animals in an epidemic outbreak of an animal disease to protect a country's export position (A: 50%, B: 50%) and to prevent eye infections caused by the disease in people who had been in direct contact with infected animals (A: 41%, B: 45%). Most respondents (A: 81%, B: 61%) agreed with culling to protect human life. More A respondents (53%) agreed with culling to stop the disease from spreading than B respondents (29%). The most important argument against culling was the value of animal life. The A respondents rated all arguments against culling (significantly) lower than the B respondents. A lower rating meant that the argument was less important for one's judgement on the culling.
It is argued that people who value their convictions high, *therefore* value them high in judgement, and *therefore* are less likely to agree with the culling of healthy animals.

Introduction

In 1997-1998, 2001 and 2003 Europe faced epidemic outbreaks of classical swine fever, foot and mouth disease and highly pathogenic avian influenza respectively. Especially the United Kingdom and the Netherlands experienced major outbreaks of these diseases. The then current European prevention and control policy did not allow for vaccination. Instead, the control strategy entailed the culling of infected and healthy animals within 1-3 km from the source of the infection. This policy was adopted because preventive vaccination was more expensive than culling and at that time no marker vaccine was available to determine whether an animal was vaccinated or infected. This was important for the export position of a country, because trade of animals and animal products was only allowed between countries with a disease-free status (Mepham 2004 Berentsen, Dijkhuizen and Oskam 1991 Koninklijke Nederlandse Academie van Wetenschappen 2002). Furthermore, it was essential to stop the highly contagious diseases from spreading and infecting other animals.

The culling included animals kept for commercial purposes, such as for food production, and for non-commercial purposes, such as for recreation, breeding of rare species, nature management and company. It involved a number of animal practices, such as livestock keeping, backyard animal keeping, parks and zoos and nature management.

In these practices, keepers have a moral and legal duty to properly care for the health and welfare of their animals and to protect them from harm. However, during the epidemics, the stamping-out strategy, the transport restrictions, the culling by inexperienced slaughter men, and the speed at which animals had to be culled all caused welfare problems. Therefore, the individual keepers' duty to care for their animals was overruled by their duty not to impede legal activity to stop the epidemic, as well as by the economic interest of the livestock sector and the nation.

This decision to cull turned out to be strongly opposed in society. In the ensuing public debate, not only animal keepers resisted the culls. It also came from the general public, having witnessed footage of the large scale culling, the animal welfare problems, and the trauma inflicted on the keepers in the United Kingdom (Mepham 2001 Crispin et al. 2002 Laurence 2002 Farm Animal Welfare Council 2002 Institute for Health Research 2002 Anthony 2004 Murphy-Lawless 2004 Mepham 2004) and the Netherlands (Huirne et al. 2002 Van Haaften and Kersten 2002 Rutgers 2003 Nederlandse Vereniging tot Bescherming van Dieren 2004).

Anthony (2004) described the debate as value-laden. From an economic perspective animals were seen as economically valuable, essential for the functioning of the livestock sector and for a solid position on the international trade market. The opposition from the animal keepers involved and from society as a whole demonstrated that economic motives were no longer considered sufficient reason to

cull healthy animals. The economic value of animals was in conflict with other values. In the debate, the people who were against culling expressed these other values by using terms as 'respect for life', 'right to life', 'a duty to care and protect' and 'senseless killing' as arguments against culling. This vocabulary showed an appreciation of animals as living beings rather than as economic units. It indicated that a change in people's convictions about animals was taking place, which required a re-thinking of society's responsibilities towards them.
The governments at the national and European level realized that new prevention and control policy were required to reflect changes in convictions (Raad voor het Landelijk Gebied and Raad voor Dierenaangelegenheden 2003, 2004). For new policy, more knowledge about these convictions, about the values they are based on and about their role in an animal debate are required. However, people's convictions about animals are shaped by a multitude of social, cultural and religious influences (Heleski Mertig and Zanella 2006 Pagani Robustelli and Ascione 2007), personal experience (Miura Bradshaw and Tanida 2002) and knowledge about the mental capacities of animals (Bekoff 2007 Knight and Barnett 2008). Furthermore, in a pluralistic society with people from a variety of backgrounds, one might expect a diversity of convictions and their strengths, and these may be the source of opposition in animal issues.

Aim of the study
The aim of the study was twofold. First the aim was to describe the diversity of convictions in Dutch society and second to describe the role of these convictions in judgement on the culling of healthy animals during an animal disease epidemic. The results may contribute to the development of new prevention and control strategies for contagious animal diseases. In this paper the results of a national survey are presented.

Methodology

For the empirical study a model was developed to be used in an Internet survey. An empirical approach was chosen because the focus of this study was to learn more about moral convictions in Dutch society, as the stamping-out strategy had led to public debates between stakeholders and even in society as a whole.
The model consisted of two parts. In part one, moral convictions were identified and described. In part two, in the form of a case-study, the role of these moral convictions in the justification of culling healthy animals was studied.
First a definition of moral conviction was required. The definition used in this study was based on Warren's (1997) discussion of the moral importance of animals, which is based on certain values. For the current study, moral convictions were defined as

people's beliefs about the moral importance of animals and people's ensuing responsibilities towards them.

In a next step the aim was to find what moral convictions are about. To this purpose, an analysis was performed on public debates about animal issues at the European and at the Dutch level on the culling during an animal disease epidemic (see references in the introduction) and on animal issues in general. Four domains were identified that lie at the heart of these debates. These domains are: the hierarchical position of animals with respect to people, an animal's value (as in appreciation), people's moral responsibility to care for and protect animals (to do good) and animal rights. Therefore, the framework of the model is centred round these domains.

For each domain a number of statements refer to this domain reflecting what the opinion is with respect to the domain.

Domain one is about the hierarchical position of humans with respect to animals. For this domain three statements each refer to this domain: humans are superior to other animals, humans and animals are equal, and animals are superior to humans.

Considering humans to be superior to animals may originate from a religious, cultural, evolutionary or biological point of view.

Although Christian-Judean religious texts are open to different interpretations, the most common interpretation is that humans rule over animals because animals were not considered to have immortal souls, and because humans were given stewardship over the natural world (Armstrong and Boltzer 2003).

The cultural justification may be based on the fact that animals have been domesticated for centuries and kept for human purposes, and because humans have the power to do so (Serpell 2004).

The evolutionary justification holds that in the course of evolution humans have become more developed than other animals, especially in mental capacities, granting them a position at the top of the evolutionary ladder (Hyers 2006).

The justification for a superior position is based on values which differentiate between species, for instance rationality or moral agency. An equality opinion is based on values that emphasize the similarity between humans and animals, such as both being living beings, or both being part of a natural order. This opinion is inspired by recent scientific studies about the nature of animals and their mental capacities (Bekoff 2007), which reveal that humans and animals share many characteristics. An opinion that animals are superior to people may be based on a holistic view on the natural world, in which animals are seen as people's superior teachers to reconnect with nature and our inner selves (Kupper 2009).

Domain two refers to the value of animals. For this domain two statements each refer to the domain: animals have value, and animals have no value. In this case value is defined as the appreciation for an animal based on its intrinsic value as a living being, its instrumental value to people, its relational value to people, its

functional value for the ecosystem, and its value as part of Creation. Over the centuries, animals had already earned appreciation for their usefulness to people (e.g., for food) or in a relational sense (e.g., as companions). Now animals are increasingly appreciated for their role in the ecosystem (Taylor 1986 Leopold in Warren 1977), and have become intrinsically valuable. The latter means that animals are recognized as having value in their own right as beings with a life of their own, and a purpose in life that is inherent to their species-specific needs. This domain is somewhat different in that a statement: *some* animals have value, is not included, because the purpose of this domain was to discover how the intrinsic value is appreciated with respect to the other values.

Domain three refers to doing good to animals by caring for their health and well-being, by not harming them, and by protecting them against harm. For this domain three statements each refer to the domain: a duty to do good to all animals, a duty to do good to some animals and no duty to do good to animals. This domain reflects that people's actions matter to animals, whose welfare and flourishing can be promoted or thwarted by these actions. This animal welfare issue is and has always been the core domain in criticism on certain animal use (Bentham 1789 Singer 1995).

Domain four refers to animal rights. For this domain three statements each refer to the domain: all animals have a right to life, some animals have a right to life, and animals have no right to life. This domain allows for several aspects of rights, such as a right to freedom, or to autonomy. For this study the right to life was chosen because of its relevance for the debate on the culling of animals. With respect to a right to life, there are differing points of view. According to some (Taylor 1986 Schweitzer in Warren 1997), life as such has value; therefore killing is a harm done to all living creatures, even if the animal may not be aware of this and merely has an unconscious urge to live. To some, only the killing of an animal with a higher intelligence and consciousness is morally wrong, because these animals may have a concept of life, death and the future. They therefore have a conscious desire to live to fulfil future-oriented desires (Regan 1983 McMahan 2002).

The issue of animal rights is more debated than animal welfare, because it takes people's legal and moral responsibilities much further (Wise 2004). Some argue that animals lack the relevant features to qualify as rights-bearers, i.e., rational moral agents with a sense of justice and an understanding of, and ability to abide by mutual agreements (Carruthers 1992 Scruton 2000). Others are concerned about the practical implications of giving animals (legal) rights (Posden 2004).

To learn more about moral convictions, a description in terms of domains and statements is not sufficient. Insight is also required into what these convictions are based on: the *why* of convictions. To answer this question the academic animal ethics debate about the moral importance of animals was useful. Animal ethics in the academic realm and animal issues in the public debate are both concerned with

the question: *Are animals morally important and if so, why?* In the academic debate, values are proposed which an animal is required to fulfil for moral importance. For instance, some authors argue that being a living being (Taylor 1986 Schweitzer in Warren 1997) is sufficient to be morally important. Other authors argue that being able to feel pain and emotions (sentience) (Bentham 1789 Singer 1995), or being conscious (Regan 1983), or being able to think and to distinguish between right and wrong (Scruton 2000 Carruthers 1992 Kant in Warren 1997), or having a notion of the future and of life and death (McMahan 2002) are required as well. Some authors refer to the importance of the emotional, functional or historical relationship between animals and people (Anderson 2004 Noddings in Warren 1997). Other authors emphasize their role as a species within an ecosystem (Callicot in Warren 1997 Leopold in Warren 1997 Taylor 1986). Another value refers to virtuous character. A virtuous person would not harm an animal, because that would be a sign of bad character (Hursthouse 1999). Warren (1997) proposes a multi-values account for moral importance (she calls this moral status). She argues that in the public morality not one value, but a number of values (called values in the current study)are important for moral importance, depending on the situation.

The above-mentioned values were included in the model to describe the *why* of moral convictions. Moreover, a religion or philosophy of life value was included, to study whether religion or a philosophy of life contributed to the respondents' convictions, and to examine the relative importance of this value with respect to the other values.

Part one of the model was constructed by domains, statements and values. In this way, moral convictions were described by the combination of a statement and a supporting value. For instance, a person might have the conviction that one has a duty to do good (domain three) to all animals (statement), because they are living beings (value). Another person might have the conviction that one has the duty to do good to some animals, namely those that are sentient. Each value stands for a value, such as the value of life.

The second part of the model was a case-study and consisted of four cases. Each case described an argument in favour of culling and arguments against culling. It described the culling of healthy cows and chickens in an animal disease epidemic. These two species were presented because people may distinguish between mammals and birds (Eurobarometer 2007). This can be based on an animals' mental capacities (in the cases the term 'highly developed' was used), or because humans are mammals, and other mammals such as cows may be more appealing.

The arguments in favour were: to stop a disease from spreading (case one), to safeguard the export position of a country (case two), to protect people against eye infections (case three) and to protect human life (case four).

The arguments against culling were: healthy cows and chickens should not be culled because: animal life is valuable / cows are highly developed (mental capacity to

think, feel, and be conscious) / chickens are highly developed (idem) / special and rare breeds are valuable (important for a species, a region, or the ecosystem) / animals have a financial value to people (for instance production animals as a source of income for the farmer) / people have a personal bond with these animals (relational bond) / killing animals is a bad character trait (virtue) / animals are part of Creation (religion). These eight arguments were the same in all four cases. This was done to study whether an argument was valued differently in the different cases. Each of these arguments against culling was a 'translation' of a value. In this way it became an argument against culling. For instance, an example of a moral conviction is: *animals have a right to life because they are living beings*. In the cases it became an argument against culling, namely: *these healthy cows and chickens should not be culled because animal life is valuable*. As such the role of moral convictions in judgement was determined.

In the form of a questionnaire, the model was sent to an Internet panel which was approached through CentERdata (www.centerdata.nl). CentERdata performs on-line survey research by means of a CentERdata panel. It consists of 2000 households, that once a week fill in an Internet survey. This Internet panel is an appropriate representation of the Dutch-speaking population. Information about gender and age was available. In the current survey further information was obtained to find whether the respondents had contact with animals privately or professionally. The questionnaire consisted of both closed and open questions.

In part one the respondents were asked to choose one statement per domain. For instance, a respondent chooses the statement that humans are superior to animals.. Then the respondent rates all the values that support this statement with a number between 0-10, 0 means not at all important for the respondent's opinion and 10 means most important for the respondent's opinion. The higher the rating, the more important he/she considers the value for his/her statement. In an open question the respondents could add another value or a comment.

In part two, the case-study, the respondents gave their judgement on the culling per case. They could choose between: I agree, I partly (dis)agree or I disagree with the culling. They motivated their judgement by rating the argument in favour of or against culling by a number between 0 and 10. The number 0 indicated that the argument was not important at all for their judgement, and the number 10 indicated that the argument was most important. The questionnaire is included in appendix one.

The diversity of convictions showed in the combination of chosen statements of the four domains. This combination was called *profiles*. Each profile is described by the combination of four numbers. The first number refers to a statement (1, 2, 3) of domain one: the position of the animal. The second number refers to a statement of domain two (1, 2): the value of animals. The third number refers to a statement (1, 2, 3) of domain three: to do good, and the fourth number refers to a statement (1, 2,

3) of domain four: the right to life. In this way 54 combinations of statements (3x2x3x3), are theoretically possible.
Of the profiles that included most respondents, statistical analysis of the ratings was performed. The average rating of the values per statement was analyzed to find out for each statement which values rated relatively high in relation to each other, and whether there were significant differences in rating between the profiles.
In the case-study, it was first determined how the respondents had judged per case, to find out if there were differences between convictions. Then with the average rating of the arguments in favour of and against culling, it was determined, which arguments were rated high in relation to each other what their relative rating was per judgement category and per case and whether there were significant differences in rating between respondents with different profiles.

Data analysis
The demographic data obtained were gender, age and contact with animals in private life or work. The values were grouped into: 'rated low' (rate between 0 and 4.9), 'rated average' (between 5 and 6.9) and 'rated high' (between 7 and 10). The ratings were not categorized into equal groups, but were categorized on the basis of their subjective meaning. This was done because moral convictions in themselves are subjective and the result of the personal interpretation of a respondent. Therefore conclusions were drawn on the basis of the relative differences between the ratings.
Statistical analysis was performed with SPSS 1.5 for Windows. By means of the Kolmogorov-Smirnova test it was established that the ratings of the values were not normally distributed. Therefore, the Mann-Whitney test ($p<0.05$) was used to identify possible significant differences in rating of the same argument *between* different moral convictions (rows in tables).
A principal component analysis (PCA) using SPSS version 15 was performed for three reasons. Firstly, a PCA analysis assisted in grouping the values into values important for a statement and those not (or less) important. Secondly, the values may not be independent from each other but may be inter-correlated. A conviction may be based on more than one value. For instance, the fact that an animal is a living being may be necessary to a respondent for some moral importance, but he/she may find that this should be combined with an ability to feel pain and emotions for full importance. Thirdly, it needed to be established whether the domains themselves were independent from each other. In the model the domains are presented as separate from each other, but this cannot be merely assumed.
Prior to the analysis it was assessed whether the data were suitable for this analysis. The correlation coefficient between the statements needed to exceed >.3. The Kaiser-Meyer-Olkin value needed a recommended value of .6 or more. The Bartlett's Test of Sphericity needed to be significant ($p<0.05$).

The following questions were addressed. Can the values be grouped into important or not (or less) important for a statement? With the PCA the values were grouped into components. Components with an eigenvalue of 1.0 or higher were considered important. Then the next question was: which values are relatively the most important for a component (load with a coefficient >.5). The third question was: are values per component inter-correlated (i.e., not independent)? The latter two questions were approached by the direct oblimin rotation method.

Results

Demography

In group A, 54% were male, 66% were between 45-64 years of age, and 49% had contact with animals. 59% of group B were female, and compared to group A was younger with 46% aged between 15-45 years, and had more contact with animals (66%). The Central Bureau of Statistics in the Netherlands (CBS, www.cbs.nl, retrieved 25 June 2008) provides demographic data of the Dutch population. According to these data, the ratio male to female is 1:1, and the highest percentage of the Dutch population is found in the 40-65 age range.

Diversity of convictions

The survey was sent to 2,545 people. Of these, 2,051 respondents (81%) returned the questionnaire, and 1,999 respondents had filled out the questionnaire completely. This high response rate was due to the fact that the respondents were part of an existing CentERdata Internet panel, and were therefore more motivated

Table 1 Choice of statement* per domain by the total group (n) and A and B profile (%)

Domain	Statements	Total n=1999	A n=993 50%	B n=559 28%
Position	Humans are superior to animals	67	100	
	Humans and animals are equal	32		100
	Animals are superior to humans	1		
Value	Animals have value	100	100	100
	Animals have no value			
Do good	People should do good to animals	85	100	100
	People should do good to some animals	12		
	People don't have to do good to animals	3		
Rights	All animals have a right to life	87	100	100
	Some animals have a right to life	12		
	Animals have no right to life	1		

*The respondents could only choose one statement per domain

to participate. Table one gives the percentage of respondents per statement: for domain one 67% stated that people are superior to animals and 32% stated that they are equal. These two statements referred to one domain and were therefore mutually exclusive. For the other domains 100% stated that animals have value, 85% stated that people should do good to all animals and 87% stated that all animals have a right to life. These statements were not mutually exclusive, because they referred to different domains.

In total 19 profiles were identified (table two). Two profiles were dominant and were called A and B. Profile A included 50% of the respondents (n=993). This group had chosen the combination of statements 1111. This is: humans are superior to animals, and animals have value, and people have a moral duty to be good to *all* animals, and *all* animals have a right to life. Profile B included 28% of the respondents (n=559). These respondents had chosen the combination 2111. This

Table 2 Profiles: combination of statements of the four domains

Profile	Number of respondents	Percentage respondents
1111 =A	993	49.7
1112	88	4.4
1113	13	0.7
1121	92	4.6
1122	98	4.9
1123	4	0.2
1131	37	1.9
1132	11	0.6
1133	7	0.4
Subtotal	**1343**	**67.4**
2111 =B	559	28.0
2112	25	1.3
2113	1	0.1
2121	31	1.6
2122	14	0.7
2131	11	0.6
Subtotal	**641**	**32.3**
3111	12	0.6
3112	1	0.1
3121	1	0.1
3132	1	0.1
Subtotal	**15**	**0.9**
Total	1999	100.0

A profile is determined by the combination of statements. Each combination consists of four numbers. The first number refers to a statement (1, 2, 3) of hierarchy, the second number to a statement (1, 2) of value, the third number to a statement (1 ,2, 3) of to do good, the fourth number to a statement (1 ,2, 3) of right to life

profile differed with A in that these respondents considered humans and animals to be equal.
Three smaller profiles: C (5%), D (5%) and E (5%) also considered humans to be superior, but were of the opinion that people should do good to *some* animals (C and D) and that *some* animals have a right to life (C and E). The 14 other profiles were each chosen by a very small number of respondents and were therefore too limited for further analysis. Further analysis was performed with A and B.

Domains and values
After the respondents had chosen one statement for each domain, they were asked to rate the values in support of this statement with a number between 0 and 10. The rating of the values by the A and B respondents i*s* presented in table three. Most values were rated average or high, except for the ratings for the statement *humans are superior to animals* and the religion or philosophy of life value in domains one, three and four.
In domain one (position of animal with respect to humans), the A group respondents based their choice of the statement *humans are superior to animals*, mainly on the values *animals cannot think* (rate 6.7) and *animals cannot distinguish between right and wrong (*6.1). The other values were rated low (2.1-3.5). The B respondents based their choice of the statement *humans and animals are equal* mainly on the values: *both humans and animals are living beings (9.1)*, *both humans and animals are sentient* (8.7) and *both humans and animals are important in the ecosystem (8.7).*
For domain two (value as in appreciation), for the A and b respondents the statement *animals have value* was based on the values: *animals are living beings (A: 7.9 and B: 8.4), animals have a functional use to people* (7.9 and 8.3), *People have a relationship with animals*,(7.9 and 8.5),*animal species are important for the ecosystem (8.3 and 8.8) and my religion or philosophy of life tells me so* (7.3 and 7.0) Only in this domain was the religion or philosophy of life argument rated high (7.3 and 7.0).
For domain three (to do good by caring for and protection), the statement *people should do good to all animals* was mostly based on the values *animals are living beings (8.7 and 9.2)*, *animals are sentient* (7.6 and 8.5) and *animals are important in the ecosystem (8.1 and 8.8).*
Domain four (the right to life) showed some dissimilarities between the A and B respondents. For the former group the choice of the statement that *all animals have a right to life* was based mainly on the values *animals are living beings (7.7 and 8.6)*, *animals have an urge to live (7.1 and 8.0)*, and *animals are important for the ecosystem (8.1 and 8.8).* The B respondents rated *animals are sentient* high (7.4) and *animals should be able to fulfil their life-cycle* high as well (8.1). The A group rated most values significantly lower than the B group.
A PCA was performed on the statements. It did not include the domain *animals have value*, because all respondents had chosen statement one (animals are valuable). The

Table 3 Average rating of values in support of a statement per domain by the A and B profile

Domains	Position		Value		Do good		Rights	
Profiles	A	B	A	B	A	B	A	B
Row: Statement Column: values	People are superior to animals, because:	People and animals are equal, because:	Animals have value, because:		People should do good to all animals, because:		All animals have a right to life, because:	
Animals are living beings		9.1	7.9s	8.4s	8.7s	9.2s	7.7s	8.6s
Animals are not/are sentient	3.5	8.7			7.6s	8.5s	5.93	7.4s
Animals cannot/can think	6.7	6.4			4.7s	6.2s	4.5s	6.1s
Animals cannot/can distinguish between right and wrong	6.1	5.3						
Animals should be able to fulfil their lifecycle							6.7s	8.1s
Animals have an urge to live							7.1s	8.0s
Animal species are not/are important in the ecosystem	3.5	8.7	8.3s	8.8s	8.1s	8.8s	8.1s	8.8s
Animals are useful to people			7.9s	8.3s				
People have a relationship with animals			7.9s	8.5s				
People become a better person by being good to animals					5.5	6.3		
My religion or philosophy of life tells me so	2.1	2.8	7.3	7.0	2.8	2.9	2.6	2.9

Empty cells=values not relevant for the statement. s=significant differences in rating of a value *between* A and B $p<0.05$. For domain one A and B had chosen different statements, therefore no significant differences were computed.

correlation matrix showed a low coefficient of .328 between *to do good* and *right to life*. The Kaiser-Meyer-Olkin value (.543) was lower than the recommended value of .6, but the Bartlett's Test of Sphericity was significant ($p<0.05$).

Hierarchy was negatively correlated with *to do good* and *right to life*. *To do good* (.827) and *right to life* (.802) loaded strongly on component one with an eigenvalue of 1.4, which explained 47% of the total variability. *Hierarchy* loaded strongly (.999) on component two with an eigenvalue of .992, which explained 31% of the total variability.

Table four gives the PCA loadings of the values per statement for the profiles A and B. The analysis showed that for each statement the values loaded on two or three components named C1, C2 and C3. In the survey the respondents had valued the statements according to the importance for each for their opinion. Therefore the components represented the degree of importance, with C1=the most important, and C2 and C3=less important.

For the statement *humans are superior to animals* (A group domain one) the values *animals cannot think* and *animals cannot distinguish between right and wrong* loaded the strongest on C1 and were highly inter-correlated.

For the statement *humans and animals are equal* (B group domain one) the values *both humans and animals are living beings*, and *both humans and animals are sentient* were highly inter-correlated and together with the value *both humans and animals are important in the ecosystem* loaded the strongest on C1. A third component C3 included the highly inter-correlated values *animals cannot think* and *animals cannot distinguish between right and wrong*. This indicated that they were seen as inter-correlated, but not important for the statement. These two values were not correlated with the religion statement.

For the statement *animals have value (*domain two) the values *animals are important for the ecosystem*, *animals are useful to people,* and *animals have a relational bond with people* were highly inter-correlated and loaded the strongest on C1 for both the A and B profiles.

For the statement *people should do good to all animals* (domain three), the values *animals are living beings* and *animals can feel pain and emotions* loaded the strongest on C1 for both profiles. For B the *importance in the ecosystem* also loaded strongly. All these values were highly inter-correlated.

For the statement *all animals have a right to life* (domain four), for the A and B profile the highly inter-correlated values *animals are living beings*, *animals need to fulfil their natural life-cycle*, and *animals have an urge to live* and *animals are important for the ecosystem* loaded the strongest on C1.

For all statements the religion statement loaded (strongly) on C2 or C3, rendering it the least important statement.

The results of the PCA analysis showed that the values could be grouped into important and not (or less) important. When comparing this with the ratings this meant that values valued between 0-5.9 were not important and those between 6-10 were important. Thus the ratings and the PCA support each others findings, with the exception of the value *animals are living beings* in domain two. This value does not load strongly on C1. This could indicate that the respondents had interpreted *value* as merit (for humans or the ecosystem) rather than appreciation (for life itself).

Case-study: judgement

The respondents were asked to give their judgement on the culling of healthy cows and chickens in four cases (table five). Most respondents partly (dis)agreed with the culling to safeguard a country's export position and to prevent eye infections. Most

Table 4 Component loading on C1, C2 and C3 for profile A and B per statement per domain

Domains	Position					Value				Do good				Right to life			
Profile	A Humans are superior		B Humans and animals are equal			A Animals have value		B Animals have value		A People should do good to all animals		B People should do good to all animals		A All animals have a right to life		B All animals have a right to life	
Components	C1	C2	C1	C2	C3	C1	C2	C1	C2	C1	C2	C1	C2	C1	C2	C1	C2
Eigenvalues	2.1	1.0	2.4	1.2	1.0	2.8	0.99	2.6	1.0	2.0	1.1	2.4	1.2	3.6	1.1	3.7	1.1
Possession of life			.898			.510	.469		.608	.738		.859		.785		.842	
Sentience	.512	.379	.801							.812		.812		.639	-.496		.805
Ability to think	.885			.798						.454		.498		.394	-.720		.917
Ability to distinguish between right and wrong	.814			.930													
Life-cycle														.794		.780	
Urge to live														.715		.683	
Importance of animal (species) in the ecosystem		.606	.711			.826		.719		.690		.809		.706		.839	
Utility to people						.876		.824									
Human-animal relationship						.868		.842									
To become a better person by being good to animals											.654		.713				
Religion or philosophy of life		.866			.977		.938		.892		.852		.854		.532		.300
Total variance explained	63%		76%			64%		60%		53%		62%		59%		60%	

Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization. A=profile A B=profile B C1=component 1 C2=component 2 C3=component 3 values with a value >.5 load strongly on a component and are in bold

Table 5 Judgement on the culling of healthy cows and chickens for each case and judgement by A and B profile in percentages

Judgement	Respondents who disagree with the culling		Respondents who partly (dis)agree with the culling		Respondents who agree with the culling	
Profiles	A	B	A	B	A	B
Case 1 Healthy cows and chickens are culled to stop the disease from spreading	7	15	41	57	53	29
Case 2 Healthy cows and chickens are culled to safeguard the export position of a country	25	37	50	50	25	14
Case 3 Healthy cows and chickens are culled to protect human health (eye infections)	24	32	41	45	35	23
Case 4 Healthy cows and chickens are culled to protect human life	4	9	15	31	81	61

Percentages rounded off

The A respondents agreed with the culling to stop a disease from spreading and most A and B respondents agreed with the culling to protect human life. A greater proportion of A respondents than B respondents agreed with the culling and a greater proportion of B respondents disagreed or partly (dis)agreed.

Next, the respondents were asked to rate the argument in favour of and all arguments against culling with a number between 0 and 10. Table six gives the rating of the argument in favour of culling per case per judgement category. The respondents who disagreed with the culling rated the arguments in favour low, respondents who partly (dis)agreed rated these arguments average, and respondents who agreed rated these arguments high.

Table seven shows the average rating of the argument against culling *animal life is valuable, therefore healthy cows and chickens should not be culled* per case per judgement category. Compared to the other arguments against culling, this argument was rated the highest. The respondents who disagreed with the culling rated this argument average to high, respondents who partly (dis)agreed rated this argument average and respondents who agreed rated this argument low. The A respondents rated this

Table 6 Rating of the argument in favour of culling for each case and judgement by the A and B profile

Judgement	Respondents who disagreed with the culling		Respondents who partly (dis)agreed with the culling		Respondents who agreed with the culling	
Profiles	A	B	A	B	A	B
Case 1 Healthy cows and chickens should be culled to stop the disease from spreading	3.2	3.2	6.0	5.9	8.4	8.1
Case 2 Healthy cows and chickens should be culled to safeguard the export position of a country	3.2	3.1	5.4	5.4	7.2	7.1
Case 3 Healthy cows and chickens should be culled to protect human health (eye infections)	3.3	3.0	5.5	5.4	7.6	6.8
Case 4 Healthy cows and chickens should be culled to protect human life	5.5	4.7	6.8	6.2	8.7	7.7

argument significantly lower than the B respondents. The rating of this argument was lower than its rating as a value (compare with table three).

The other arguments against culling were all rated average or low. Therefore, only the average rating of these arguments together is presented per case per judgement category in one table (table eight).

The respondents who disagreed with the culling rated these arguments low to average, respondents who partly (dis)agreed rated these arguments low and respondents who agreed rated this argument even lower.

The A respondents rated these arguments somewhat lower than the B respondents. The rating of these arguments was lower than their rating as a value (compare with table three).

In general it showed that the A respondents rated the arguments in favour of culling higher than the B respondents, and against culling (significantly) lower.

Furthermore, when comparing the rating of the arguments in favour of and against culling, it showed that the higher the rating of the argument in favour of culling, the lower the rating of the arguments against culling (compare tables six to eight).

Table 7 Mean rating of the argument *animal life is valuable, therefore these healthy cows and chickens should not be culled* for each case and judgement by the A and B profile

Judgement	Rating by the respondents who disagreed with the culling		Rating by the respondents who partly (dis)agreed with the culling		Rating by the respondents who agreed with the culling	
Profile	A	B	A	B	A	B
Case 1 Animal life is valuable, therefore these healthy cows and chickens should not be culled to stop the disease from spreading	7.1s	7.9s	5.4s	6.0s	2.6s	3.5s
Case 2 Animal life is valuable, therefore these healthy cows and chickens should not be culled to safeguard the export position of a country	6.1s	7.0s	4.7s	5.7s	3.0	3.5
Case 3 Animal life is valuable, therefore these healthy cows and chickens should not be culled to protect human health (eye infections)	6.1s	7.4s	5.0s	6.2s	3.4s	4.2s
Case 4 Animal life is valuable, therefore these healthy cows and chickens should not be culled to protect human life	s5.6	s8.0	s5.1	s6.1	s3.0	s4.2

S=p<0.05

Table 8 Average rating of the other arguments against culling together for each case and judgement by the A and B profile

Judgement	Respondents who disagreed with the culling		Respondents who partly (dis)agreed with the culling		Respondents who agreed with the culling	
Profiles	A	B	A	B	A	B
Case 1	5.2	6.2	4.4	4.8	2.3	2.8
Case 2	4.5	5.5	3.6	4.4	2.5	2.7
Case 3	4.2	5.3	3.9	4.9	2.7	3.4
Case 4	4.5	6.4	4.3	5.0	2.6	3.5

Discussion

In this section it is discussed how the results of the study may contribute to a better understanding of convictions and their role in judgement on the culling of healthy animals. In addition, an explanation of the opposition between some parties involved in the public debate about culling is presented.
With the model it was possible to identify diversity in convictions, by the choice of statements, the rating of the values, the arguments and judgements in the cases. However some issues need to be discussed.
The convictions were described by means of domains, statements and values. It is argued that the domains were the core issues of animal debates, but other domains may also be important. The theoretical framework of the model allows for other domains, statements and values, or cases and arguments to be included, dependent on the issue of study. For instance, in the current study the value of religion or a philosophy of life was included, but this value was rated the lowest. This is unexpected as about 50% of the respondents was religious (CentERdata had not provided information about a philosophy of life). This could have been due to the phrasing of this value, combining religion and philosophy of life. Therefore, a comparative religion or philosophy of life study may clarify the importance of animals by means of other domains, such as a domain based on the relation between humans and (other) animals with respect to God and Creation, or by a spiritual holistic domain based on the interdependence of spirits of all living creatures as equal partners in the natural and spiritual world. For instance, the possession of rationality or other mental capacities may not be important from a religious or spiritual point of view, but instead the possession of a soul may be more important.

Diversity of convictions
As the respondents were representative of Dutch society, the results indicate that in Dutch society most people consider humans to be superior to animals, but still feel that people should be good to all animals and that all animals have a right to life. It indicates that a superior position does not relieve people from their responsibility to properly care for animals and to respect their lives. This also follows from the PCA of the statements, which showed that a hierarchy or equality view on animals is not correlated with doing good to animals and with a right to life. This is reflected in the rating of the value *animals can/cannot think*, which was important for domain one, but not for the domains *to do good* and *right to life*. However, not all conditions for a PCA were met. Therefore a certain connection between a superiority view and one's ensuing responsibilities cannot be excluded.
It is argued that a number of values (as moral values) are shared in Dutch society. This was based on their consistent high rating for convictions and as arguments in the case-study. Furthermore, it supports Warren's multi-values account for moral

importance. In this study most values were rated average or high, meaning that more than one value was important for one's convictions. This was supported by the PCA analysis. A number of values were shown to be inter-correlated for the statements of the four domains. However, they were inter-correlated for one specific statement. The values *animals are living beings* and *animals are sentient* are highly inter-correlated for the statement *people should do good to all animals,* but for the statement *all animals have a right to life* only the value *animals are living beings* loaded high on component one. This seems to indicate that the possession of life itself is not only necessary but also sufficient for this right, and that non-sentient animals have a right to life as well. This seems to support the theory by Schweitzer (in Warren 1997) in which the possession of life of an individual animal is sufficient for moral importance and the theory of Taylor (1986) in which being a species in the ecosystem is sufficient for moral importance. However in practice, in most situations people feel a stronger duty towards sentient animals than towards non- (or less) sentient animals. Sentience renders an animal aware of external stimuli, and of the present and perhaps the future, showing a clear urge or will to live. An urge to live may also be present in non-sentient animals, but this is not so easily recognized by people. Moreover, with sentient animals it is easier to build up a reciprocal personal relationship. Therefore, one's conviction that all animals have a right to life should be seen as a starting point from which one judges a particular situation, but it may not be an absolute right.

The *virtue* and *religion or philosophy of life* values were not rated high. Virtue enjoys a renewed interest in the academic debate (Hursthouse, 1999, Degrazia, 1999), but this was not reflected in the results. Virtue is not only concerned with one particular action towards animals for the animal's sake, but also with the action as a reflection of virtuous character. A striving for virtuous character requires an understanding of the concept of virtuous behaviour as well as doing the right thing in one particular situation. Therefore, the respondents either may not have recognized this concept in the argument presented or may not have been motivated by a wish to better themselves.

Religion or philosophies of life are important sources of morality in our society, and Christianity is the predominant religion in the Netherlands. People often interpret Christian religious texts as humans having stewardship over the natural world and, in contrast to animals, having an immortal soul. This view is likely to have an influence on the moral importance of animals. In some studies (Driscoll 1992; Heleski, Mertig and Zanella 2006) religiosity was related to attitudes to animals. The current results do not support this. Religion was only important in the appreciation of animals as part of Creation (domain 2 value). This could indicate that this source of morality is more important in our relationship with Creation as a whole than with animals alone. In our relationship with animals, personal experience and upbringing, knowledge about their ability to feel, their mental capacities (Bekoff 2007; Knight

and Barnett 2008), their social behaviour, and their importance for the natural world may be more decisive for their moral importance.
The respondents were not limited to the closed questions and could give an additional answer in an open-ended question. However this did not yield important additional information.

The influence of convictions on judgement
More insight was obtained into the role of convictions in judgement. It was remarkable that most respondents were of the opinion that *all* animals have a right to life, given the fact that rights exert a strong claim on people to reconsider the use of animals. In the case-study, this value was reflected in the argument *animal life is valuable,* which was the core argument against culling. However, arguments against culling could be out-rated by arguments in favour of culling. This implies that convictions reflect beliefs about a right to life, but that in a public debate these convictions may have a different rate depending on the issue.
The respondents did not distinguish between cows and chickens. Other studies found that people do distinguish between animal species (Driscoll 1992; Knight and Barnett 2008). Knight and Barnett found that belief in animal mind, which refers to a degree of consciousness, sentience, intelligence and self-awareness is an important factor influencing people's views on animal use. Driscoll refers to popular (e.g., dogs and cats) and unpopular species (e.g., insects) and found that it was considered less acceptable to use popular species for human purposes than unpopular species. However, this was not confirmed in our case-study, as no distinction was made between cows and chickens. Furthermore, for animals to be of a special breed or having a relational or functional bond with people was not important for judgement either.
The arguments that were rated low were not necessarily unimportant. They may as *a collective* still have been important for judgement. The PCA supported this by showing that together they loaded on one component and were inter-correlated, and that the argument *animal life is valuable* and the arguments in favour of culling each loaded on a different component.

Social influences
The demographic data showed that social differences exert an influence on convictions. As compared to the B profile, the A profile consisted of older people and more men; they had less contact with animals in private life or work, and lived in smaller towns. Living in smaller communities meant that they may have been raised with farm animals kept for their utility. More B respondents were younger, were female, had more contact with animals in private life or work, and lived in larger towns or cities.

Younger people were born and raised in a period when more became known about animals, their mental capacities, their importance in the ecosystem, and people's influence on their welfare and habitat. Furthermore, from the sixties onwards, the public debate focused on the use of animals in testing and on the development of intensive farming systems. Environmental organizations increasingly draw attention to the fragile balance between animal species in their natural habitat and the consequences of people's actions on this habitat. These developments have surely influenced the outlook of younger people in relation to animals.

Several studies describe gender differences in the attitude towards animals (Herzog 1991; Driscoll 1992; Hills 1993; Fidler 2003; Robertson, Gallivan and MacIntyre 2004; Heleski, Mertig and Zanella 2006; Herzog 2007; Eurobarometer 2005). These authors describe the attitude of women as being based on identification with the animal and concern for their treatment, while the attitude of men seems to be more based on their utility.

Overall the B respondents rated their convictions significantly higher than the A respondents, their convictions exerted more weight in judgement, and a greater proportion of B respondents were against the culling.

Possible significant demographic differences such as for gender or age were not calculated as the aim was to study differences in convictions. However, it could prove useful for further research, because significant differences were found in rating between the A and the B respondents.

Opposing views in animal issues

It is concluded that in Dutch society a number of convictions are shared by a majority. How does this explain opposing views in animal issues when 78% of the respondents shared most convictions? This can be explained in different ways. Some respondents were of the opinion that animals are superior to people. People with these convictions do not represent a majority view in society, but may still have a strong voice in animal debates. Animal use is historically an accepted practice, and the moral justification of animal use as such is not questioned: is it morally justifiable to keep, benefit from and kill animals for human purposes? People who are of the conviction that animals are superior and who value this conviction highly, are likely to disagree with most keeping and treatment of animals.

However, one does not have to support a superior position of animals to be heard in an animal issue. Some people may rate their convictions high and equally high as arguments in the issue. Therefore, their convictions are not so easily overruled by human interests. Others may be of the opinion that people have no duty to do good to animals (0.7%) and therefore may see no reason to support better treatment of animals.

How does this explain the opposing views on the culls? Two things were important for an understanding of this opposition. First, a number of values (values refer to

values) had been challenged, such as the value of life (culling), of sentience (the animal welfare problems) and of the importance of animals in the ecosystem (in the epidemics special or rare animal species and semi-wild animals in nature areas had been culled as well) and the personal relation between people and the animals. Second, these values did not have the same importance for all stakeholders in this particular situation. Anthony described the culling debate as based on values. The current study showed that it is based on the differences in valuation of these values in this particular context.

In general, it is argued that people who value their convictions high, *therefore* value these convictions high in judgement, and *therefore* these convictions can only be outweighed by highly valued human interests, for instance to protect human life.

Future policy

New prevention and control policy should be aware of the nature, diversity and dynamics of moral convictions about animals, which are based on a number of values, and play a role in the culling debate. These values should be given a place in the realization of new policy. However, it is a challenge to develop policy that is acceptable by a majority in society. In this dilemma three things are relevant.

People who partly (dis)agree with the culling may require more information about the veterinary, economic, human health and animal welfare risks involved to reach judgement. Furthermore, it should be made clear which alternative measures are considered (such as vaccinating). It requires a risk assessment which also includes moral values and their importance, when a value is at risk to be jeopardized.

New policy should acknowledge that new ways of animal keeping have emerged in the Dutch rural area, such as the keeping of backyard animals. These keepers have a different and more personal relationship with their animals. In this diversity of animal keeping, policy should address the moral duties to care for and not to harm for each stakeholder not only to their own animals, but also to the animals of others.

Some people with strong convictions may never agree with the culling of healthy animals, because they do not consider animal keeping acceptable in the first place. To conclude, policy should acknowledge that policy-making for the prevention and control of animal diseases has a moral dimension reflecting society's views on how one ought to behave towards animals and their keepers.

Recommendations for future research

During the animal disease epidemics a number of animal welfare problems occurred as a result of transport restrictions and handling of the animals. These animal welfare issues were cause for concern. It is recommended for future research to study the role of convictions on the acceptability of animal welfare problems related to this issue.

The Eurobarometer (2007) in a study of attitudes towards the welfare of farmed animals in the European member states concluded that there are '*very distinct realities with regard to the welfare and protection of farm animals within the Union'* (p. 72) and that this may be caused by different levels of awareness and attitudes in the member states. The model may be useful to study in what respect these animal welfare issues are perceived differently in the various European member states and if this can be explained by differences in moral convictions about animals.

Acknowledgements

We would like to thank Ing. F.A. Steenstra, Dr. Ir. S.J. Oosting and Dr. T.B. Rodenburg for their valuable contribution to the statistical analysis of the results. We would like to thank Prof. dr. I. Weeda for her valuable contribution to the development of the questionnaire, and S.M. Greene MSc. for editing the manuscript. This article is part of the research project entitled '*New foundations for prevention and control of notifiable animal diseases'* that is funded by the Netherlands Organization for Scientific Research (NWO).

References

Anderson E 2004 Animal rights and the rates of nonhuman life. In Animal rights, current debates and new directions. ed. CR. Sunstein & MC Nussbaum US: Oxford University Press 277-299

Anthony R 2004 Risk communication, rate judgements, and the public-policy maker relationship in a climate of public sensitivity toward animals: revisiting Britain's foot and mouth crisis. Journal of Agricultural and Environmental Ethics 17(4-5), 363-383

Armstrong SJ, RG Boltzer 2003 General introduction on animal ethics. The Animal ethics reader, Routledge, 1-10

Bekoff M 2007 The emotional lives of animals, New World Library, Novaro: California

Bentham J 1789 Duty to minimize suffering. In P.A.B. Clark & A. Linzey (Eds). Political theory and animal rights, 135-137. London: Pluto

Berentsen PBM, AA Dijkhuizen AJ Oskam 1991 A dynamic model for cost-benefit analyses of foot-and-mouth disease control strategies. Preventive Veterinary Medicine 12, 12-13, .229-243

Carruthers, P 1992 The animals issue. Moral theory in practice. United Kingdom: Cambridge University Press.

Cohen NE, EN Stassen MAPM van Asseldonk 2007 Social-ethical issues concerning the control strategy of animal diseases in the European Union: a survey. Agriculture and Human Values, 24(4): 499-511

Crispin SM, PA Roger H O'Hare SH Binns 2002 The 2001 foot and mouth disease epidemic in the United Kingdom: animal welfare perspectives. Revue Scientific et Technique International Office of Epizoonotics 21(3), 877-883

Cumbria FMD Inquiry Panel, August 2002 Cumbria foot and mouth disease inquiry report. www.cumbria.gov.uk accessed the 20th of June 2004

Degrazia D 1999 Animal ethics around the turn of the twenty-first century. Journal of Agricultural and Environmental Ethics 11: 11-129

Driscoll JW 1992 Attitudes towards animal use. Anthrozoös 5 (1): 32-39

Eurobarometer 2007 Attitudes of consumers towards the welfare of farmed animals 229 / wave 63.2 - TNS Opinion & Social

Farm Animal Welfare Council January 2002 Foot and mouth disease 2001 and animal welfare: lessons for the future. Report of the FAWC: London.

Fidler M 2003 Animal status as a response to pet owner experience. Anthrozoös 16 (1) 75-82

Haaften EH, PH van Kersten 2002 Veerkracht. Report of Alterra, no. 539, Alterra, Wageningen.

Heleski CR., AG Mertig AJ Zanella 2006 Stakeholder attitudes towards farm animal welfare. Anthrozoös 19(4) 290-307

Herzog HA Jr, NS Betchart RB Pittman 1991 Gender, sex role orientation, and attitudes towards animals. Anthrozoös (3) 184-191

Herzog HA 2007 Gender differences in human-animal interactions: a review Anthrozoös 20 (1) 7-21

Hills AM 1993 The motivational bases of attitudes towards animals. Society & Animals 1 (2): 111-128

Huirne RBM, M Mourits F Tomassen JJ de Vlieger TA Vogelzang 2002 MKZ Verleden, heden en toekomst. Over de preventie en bestrijding van MKZ, report LEI, Den Haag

Hursthouse R 1999 On virtue ethics. Oxford: Oxford University Press

Institute for Health Research April 2002 Evidence submitted to Cumbria foot and mouth disease inquiry. Report Lancaster University.

Hyers L 2006 Myths used to legitimize the exploitation of animals: an application of Institute for Health Research, (April 2002). Evidence submitted to Cumbria foot and mouth disease inquiry. Report Lancaster University

Knight S, L Barnett 2008 Justifying attitudes towards animal use: a qualitative study of people's views and beliefs. Anthrozoös 21(1): 31-42.

Koninklijke Nederlandse Akademie van Wetenschappen January 2002 Bestrijding van mond- en klauwzeer, 'stamping out' of gebruik maken van wetenschappelijk onderzoek. Report Koninklijke Nederlandse Akademie van Wetenschappen: Amsterdam, the Netherlands.

Kuppen JFH 2009 Democratizing Animal Biotechnology. Inquiring and deliberation in ethics and governance, thesis, Free University, Amsterdam, the Netherlands

Laurence, CJ 2002 Animal welfare consequences in England and Wales of the 2001 epidemic of foot and mouth disease. Revue Scientific et Technique International Office of Epizoonotics 21(3) 863-868

Mepham B 2001 Foot and mouth disease and British agriculture: ethics in a crisis. Journal of Agricultural and Environmental Ethics 14(3): 339-347

Mepham B 2004 Farm animal diseases in context. Journal of Agricultural and Environmental Ethics. 17(4-5): 331-340

McMahan J 2002 The ethics of killing. Problems at the margins of life. New York: Oxford University Press.

Miura A, S Bradshaw H Tanida 2002 Childhood experiences and attitudes towards animal issues: a comparison of young adults in Japan and the UK. Animal Welfare 11 (4) 437-448

Murphy-Lawless J 2004 The impact of BSE and FMD on ethics and democratic process. Journal of Agricultural and Environmental Ethics 17(4-5): 385-403

Nederlandse Vereniging tot Bescherming van Dieren 2004 Reactie van de Dierenbescherming op de evaluatie van de vogelpestcrisis 2003 n.a.v. het rapport van het Bureau Berenschot en de reactie van het kabinet. Report, The Hague, The Netherlands

Pagani C, F Robustelli, FR Ascione 2007 Italian Youths' Attitudes toward and Concern for Animals. Anthrozoös (20)3 275-293(19)

Posner RA 2004 Animal rights: legal, philosophical, and pragmatic perspectives. In C.R. Sunstein, & M.C. Nussbaum (Eds), Animal rights, current debates and new directions US Oxford University Press 51-78.

Raad voor het Landelijk Gebied & Raad voor Dieraangelegenheden December 2003 Dierziektebeleid met draagvlak, advies over de bestrijding van zeer besmettelijke dierziekten, deel 1, advies. RLG 03/8 RDA 2003/08.

Raad voor het Landelijk Gebied & Raad voor Dieraangelegenheden January 2004 Dierziektebeleid met draagvlak, advies over de bestrijding van zeer besmettelijke dierziekten, deel 2 Onderbouwing van het advies. RLG 03/8 RDA 2004/01.

Regan T 1983 The case for animal rights, Berkeley and Los Angeles: University of California Press.

Robertson JC, J Gallivan PD MacIntyre 2004 Sex differences in the antecedents of animal use attitudes, Anthrozoös 17 (4) 306-319

Rutgers LJE, JM Swabe EN Noordhuizen-Stassen 2003 Het doden van gehouden dieren. Report Utrecht University

Scruton R 2000 Animal rights and wrongs. London: Demos, third edition

Serpell JA 2004 Factors influencing human attitudes to animals and their welfare. Animal Welfare, (13) S145-1551

Singer P 1995 Practical ethics Cambridge University Press second edition

Taylor P 1986 Respect for nature, a theory of environmental ethics. Princeton, New Jersey: Princeton University Press.

Warren MA 1997 Moral status: obligations to persons and other living things. Oxford: Oxford University Press

Wise S 2004 In CR. Sunstein & MC Nussbaum (Eds) Animal rights, current debates and new directions. US, Oxford University Press 19-51

Moral convictions concerning animals and the culling of healthy animals in animal disease epidemics

An empirical survey among farmers and veterinarians

6

Moral convictions about animals and the culling of healthy animals in animal disease epidemics. An empirical survey among farmers and veterinarians

NE Cohen FWA Brom EN Stassen

Submitted to Animal Welfare 2010

Abstract In this paper the results of an empirical survey among veterinarians and farmers are presented. The aim was to describe the diversity of their moral convictions about animals, and to study the role of these convictions in judgement on the culling of healthy animals during an animal disease epidemic.
The results showed a diversity of convictions, which were based on a number of values. The convictions of the veterinarians and the farmers were based on the same values.
Most veterinarians and farmers considered humans to be superior to animals, mostly because they were of the opinion that animals cannot think as well as humans and cannot distinguish between right and wrong. They were of the opinion that all animals have value, because animals are living beings, are important in the ecosystem, have a functional use for people and because there is a personal relationship between humans and animals. They were of the opinion that people have a moral responsibility to do good to all animals, which is having a duty to care for and protect animals, mostly because animals are living beings, are sentient and are important in the ecosystem. They were of the opinion that all animals have a right to life, mostly because animals are living beings and are important in the ecosystem.
It is argued that for veterinarians and farmers a number of values constitute the fundament of their moral convictions about animals, upon which animals' moral importance and people's moral responsibilities to animals are based.
The majority of the veterinarians and the farmers either disagreed or partly (dis)agreed with culling healthy animals to stop an animal disease from spreading and thus infecting other animals, to safeguard a country's export position, or to prevent eye infections in people. This judgement was based on a high valuation of animal life. Culling to protect human life was agreed on by most.
It is argued that a person who values animal life highly, will value animal life highly as an argument against culling. Therefore, arguments in favour of culling must be valued higher than the value of animal life for a person to agree with culling.
It is suggested that new animal disease policy should not only acknowledge the ethical aspects of culling healthy animals, but should also aim to minimise the animal welfare problems in the control of an epidemic.

Introduction

From 1997 to 2003 three major animal disease epidemics: classical swine fever, foot and mouth disease and highly pathogenic avian influenza broke out in Europe. To prevent or control these diseases animals were not vaccinated but culled. In this stamping-out of the diseases, an estimated 50 million infected and healthy animals were culled (www.OIE.nl). This policy was in line with the then current European non-vaccination policy to control these highly contagious diseases. Stamping-out a disease, which means culling both infected and healthy animals within a radius of 1-3 kilometres from the source of the infection, was from a financial-economic perspective, preferable to vaccination (Mepham 2004 Woods 2004 Koninklijke Nederlandse Akademie van Wetenschappen 2002). Furthermore, no marker vaccine was available to distinguish between infected and vaccinated animals (Berentsen et al 1991). The strategy to stop the disease from infecting other animals enabled the member states to quickly regain their 'disease free' status. The latter was imperative to resume international trade in animals and animal products. The financial setback for the individual animal keepers was outweighed by the benefit to the trade position of a country as a whole.

In the United Kingdom (Anthony 2004 Murphy-Lawless 2004;Mepham 2001, 2004 Crispin 2002 Laurence 2002 Farm Animal Welfare Council 2002 Cumbria Foot and Mouth Disease Inquiry Panel 2002 Institute for Health Research 2002 Cohen et al. 2007) and The Netherlands (Huirne and Mourits 2002 Van Haaften and Kersten 2002 Raad voor het Landelijk Gebied and Raad voor Dieraangelegenheden 2003 and 2004 Nederlandse Vereniging tot Bescherming van Dieren 2004 Van den Berg 2002) the stamping-out strategy gave rise to public resistance. Not only animal keepers resisted this strategy, but the general public as well, expressing their indignation about the culling of healthy animals after having been confronted with footage of burning pyres (in the United Kingdom), animal welfare problems and the grief of the animal keepers directly involved.

It was assumed that farmers would support the decision to cull the animals seeing as good trade position was beneficial to their business. In reality the farmers were seriously divided, with those who saw sense in this strategy and others who seriously opposed it (Anthony 2004 Murphy-Lawless 2004 Mepham 2001, 2004 Crispin et al 2002 Institute for Health Research 2002 Huirne et al 2002 Van Haaften and Kersten 2002 Rutgers 2003).

Veterinarians involved with the culling were torn between on the one hand, their duty to animals and their keepers to heal and protect animal life and on the other hand, the decision to cull healthy animals to stop the disease from spreading. They were unable to provide proper care even though numerous animal welfare problems had occurred. These were caused by transport restrictions, by slaughter men who were inexperienced and often had to cull on the farm and not in a slaughterhouse,

by overcrowding in the stables leading to aggression and cannibalism, and by having no access to sick or pregnant animals for treatment (Laurence 2002 Farm Animal Welfare Council 2002).

A contract with animals

Veterinarians and farmers are committed to working with or for animals. To a large extent, the human-animal bond is defined by the function fulfilled by the animal; a bond based on an understanding that when one takes good care of the animal's health and welfare the animal will provide you with food, company or other valuable goods or services. This give and take between people and animals has existed since animals became part of the human community and can be described in terms of a 'contract' (Palmer 1997).

Veterinarians are committed by a direct duty to care for an animal's health and welfare by practising preventive measures or treatment. This is done for the animal's sake as a living sentient being as well as for the keeper. However, with respect to food safety and public health a veterinarian also has a duty towards society. This implies that animals may be killed for public health reasons.

Farmers keep production animals primarily for food production. This determines the human-animal relationship as basically functional (Velde et al 2002). Meat-eating is accepted by a majority in Dutch society, so in the livestock sector it is legitimate to kill animals for this reason (Rutgers et al 2003). Farmers will have fulfilled the terms of the 'contract' when taking good care of the heath and welfare of the animals. Under the terms of this contract, production animals are required to provide animal products of sufficient quality. In society it is acceptable, for instance, to kill a cow, which produces no or an insufficient quantity of milk for a longer period of time (Rutgers et al 2003).

Though it may be true that production animals primarily serve a functional purpose, a number of authors (Anthony 2003 Wilkie 2005 Holloway 2000, 2001) recognised the personal bond that exists between the animals and the farmer, and describe the conflict that arises when the animals are killed. During the epidemics, the farmers were torn between their 'contract' not to harm their animals and broader political and economic considerations. They were traumatised by their inability to fulfil their side of the contract: to care for the welfare of their animals and to protect them against (in their view) senseless slaughter. Anthony (2003) described the culling being felt as an injustice towards the animals.

Moral convictions

Animals are kept for numerous reasons. These reasons can be commercial, such as for the production of food or non-commercial, such as for company or recreation. Up to a point, the nature of animal keeping determines the human-animal relationship (e.g. functional or relational) and the understanding between the animal

and the person (contract). However, it is also shaped by more fundamental moral convictions about animals. These moral convictions guide our interactions with animals and the natural world. They are shaped over time by diversity of social, cultural, religious, personal and regional inputs and by knowledge about animals. In the public debate about the culling, terms as 'respect for life' right to life' and 'senseless killing' were used to express these convictions.

New policy

At present new prevention and control strategies for contagious animal diseases are being developed which aim to better reflect the views in society about justifiable culling of animals during an epidemic. This is necessary to avoid further conflict between the animal keepers, the government and society as a whole in the case of future outbreaks of diseases. To this purpose, policy-makers should be knowledgeable of the moral convictions of animal keepers and their possible diversity between different kinds of animal keeping. Each kind of animal keeping could have its own convictions specific to the goal of the keeping, which is likely to influence judgement on the acceptability of culling healthy animals.

Studies into moral convictions

This study is part of a larger research project about moral issues at stake in the public debate about the culling. It is focused on moral convictions about animals in general and on the role of convictions in judgement about culling. As the culling had been opposed by the general public, there was reason to believe that public morality - convictions shared by a majority in society – had changed since the adoption of the European non-vaccination policy. It was no longer considered justified to cull healthy animals for economic reasons to resume export to other countries. In this discussion there were opposing opinions as to what was a justifiable reason to cull healthy animals.

In this paper, the results of the survey among veterinarians and farmers are presented. The focus was on these two groups, because both groups had been directly involved in the epidemics, and because both groups work with animals on a daily basis and are likely to have views on justifiable treatment and culling of animals.

Aim of the study

The aim of the study was twofold. First, it aimed to identify and describe moral convictions about animals among farmers and veterinarians, and to study possible differences between the two groups. Second, the study aimed to demonstrate how these convictions affect judgement regarding the culling of healthy animals in an animal disease epidemic, and whether there are differences between veterinarians and farmers in this respect. The results may contribute to a better understanding of

convictions, which is important knowledge in the development of new prevention and control strategies for contagious animal diseases. In this paper the results of an empirical survey are presented.

Methodology

For the empirical study a model was developed (Cohen et al. 2009) to be used as a questionnaire in an Internet survey among veterinarians and farmers. An empirical approach was chosen, because the focus of this study was to learn more about moral convictions not of individuals, but of groups of people in Dutch society, as the stamping-out strategy had led to public debates between stakeholders and even in society as a whole.

The theoretical framework of the model was based on two surveys and on two literature studies. The first survey was performed in the European member states to identify the priority issues for future animal disease policy (Cohen et al. 2007). Furthermore, a survey was performed among backyard animal keepers, to find which moral values were at stake in the culling of their animals. Furthermore, a literature study was performed to learn more about the social and moral issues of epidemics (see the references in the Introduction). A second literature study was performed of the academic animal ethics debate about the moral importance of animals.

Prior to the survey among veterinarians and farmers, a national survey had been performed based on this theoretical model which proved to be a good tool to describe moral convictions and their role in judgement.

The model consisted of two parts. In part one, moral convictions were identified and described. In part two, in the form of a case-study, the role of these moral convictions in the justification of culling healthy animals was studied.

First a definition of moral conviction was required. The definition used in this study was based on Warren's (1997) discussion of the moral status of animals, which is based on certain values, and people's ensuing moral responsibilities. For this study, moral convictions were defined as people's beliefs about the moral importance of animals and people's ensuing responsibilities towards them. It is *moral* because it tells us something about the right or the wrong way to treat animals, whose welfare and flourishing can be promoted or harmed by our actions.

In a next step the aim was to find what moral convictions are about. To this purpose the survey in the European member states and among backyard animal keepers and the literature study were used.

Four domains were identified that lie at the heart of debates about animal issues. These domains are: the hierarchical position of animals with respect to people, an animals' value (as in appreciation), people's moral responsibility to care for and protect animals (to do good) and animal rights. Therefore, the theoretical

framework of the model was centred round these domains. For each domain a number of statements were added, reflecting what the opinion is with respect to the domain.

Domain one is about the hierarchical position of humans with respect to animals. For this domain three statements each reflect a different opinion: humans are superior to animals, humans and animals are equal, and animals are superior to humans.

Considering humans to be superior to animals may originate from a religious, cultural, evolutionary or biological point of view. Although Christian-Judean religious texts are open to different interpretations, the most common interpretation is that humans rule over animals because animals were not considered to have immortal souls, and because humans were given stewardship over the natural world (Armstrong and Boltzer 2003).

The cultural justification is based on the fact that animals have been domesticated for centuries and kept for human purposes, and because humans have the power to do so (Serpell 2004). The evolutionary justification holds that in the course of evolution, humans have become more developed than other animals, especially in mental capacities, granting them a position at the top of the evolutionary ladder (Hyers 2006).

The justification for a superior position is based on values which differentiate between species, for instance rationality or moral agency. An equality opinion is based on values that emphasise the similarity between humans and animals, such as both being living beings, or both being part of a natural order. The latter opinion is inspired by recent scientific studies about the nature of animals and their mental capacities (Bekoff 2007), which reveal that humans and animals share many characteristics. An opinion that animals are superior to people can be based on a holistic view on the natural world, in which animals can be seen as people's superior teachers to reconnect with nature and our inner selves (Kupper 2009).

Domain two refers to the value of animals. For this domain two statements each reflect an opinion: animals have value, and animals have no value. In this case value is defined as the appreciation for an animal based on its intrinsic value as a living being, its instrumental value to people, its relational value to people, its functional value for the ecosystem, and its value for Creation. Over the centuries, animals had already earned appreciation for their usefulness to people (e.g., for food) or in a relational sense (e.g., as companions). Now animals are increasingly appreciated for their role in the ecosystem (Taylor 1986, Leopold in Warren 1977), and have become intrinsically valuable. The latter means that animals are recognised as having value in their own right as beings with a life of their own, and a purpose in life that is inherent to their species-specific needs. This domain is somewhat different in that a statement: *some* animals have value, is not included. The purpose of this domain

was not to find which animals have value, but to find how the intrinsic value is appreciated with respect to other values.

Domain three refers to doing good to animals by caring for their health and well-being, by not harming them, and by protecting them against harm. For this domain three statements each reflect an opinion: doing good to all animals, doing good to some animals and no duty to do good to animals. This domain reflects that people's actions matter to animals, whose welfare and flourishing can be promoted or thwarted by these actions. This animal welfare issue is and has always been the core domain in criticism on certain animal use (Bentham 1789 Singer 1995).

Domain four refers to the right to life. For this domain three statements each reflected an opinion: all animals have a right to life, some animals have a right to life, and animals have no right to life. This domain allows for several aspects of rights, such as a right to freedom, or to autonomy. For this study the right to life was chosen, as this is relevant for the debate on the culling of animals. With respect to a right to life, there are differing points of view. According to some, (Taylor 1986 Schweitzer in Warren 1997) life as such has value; therefore killing is a harm done to all living creatures, even if the animal may not be aware of this and merely has an unconscious urge to live. To some, only the killing of an animal with a higher intelligence and consciousness is morally wrong, because these animals may have a concept of life, death and the future. They therefore have a conscious desire to live to fulfil future-oriented desires (Regan 1983 McMahan 2002).

The issue of animal rights is more debated than animal welfare, because it takes people's legal and moral responsibility much further (Wise 2004). Some argue that animals lack the relevant features to qualify as rights-bearers, i.e., rational moral agents with a sense of justice and an understanding of, and ability to abide by mutual agreements (Carruthers 1992 Scruton 2000). Others are concerned about the practical implications of giving animals (legal) rights (Posden 2004).

To learn more about moral convictions, a description by domains and statements is not sufficient. Insight is also required into what these convictions are based on: the *why* of convictions. To answer this question the academic animal ethics debate about animals was useful. Animal ethics in the academic realm and animal issues in the public debate are both concerned with the question: *Are animals morally important and if so, why?* In the academic debate, values are proposed which an animal is required to fulfil for moral importance. For instance, some authors argue that being a living being (Taylor 1986 Schweitzer in Warren 1997) is sufficient to be morally important. Other authors argue that being able to feel pain and emotions (sentience) (Bentham 1789 Singer 1995), or being conscious (Regan 1983), or being able to think and to distinguish between right and wrong (Scruton 2000 Carruthers 1992 Kant in Warren 1997) or having a notion of the future and life and death (MacMahan 2002) are required as well. Some authors refer to the importance of the emotional, functional or historical relationship between animals and people (Anderson 2004 Noddings in

Warren 1997). Other authors emphasize their role as a species in an ecosystem (Callicot in Warren 1997 Leopold in Warren 1997 Taylor 1986). Warren (1997) proposes a multi-values account for moral status. She argues that in the public morality not one value but a number of values (called values in the current study) are important for moral importance, depending on the situation.

In our study a value was included which refers to virtuous character. A virtuous person aims to act according to virtuous character (Husthouse 1999). In this study, to do good to animals reflects virtuous character. Furthermore, a religion or philosophy of life argument was included, to study whether religion or a philosophy of life contributed to the respondents' convictions, and to study their relative importance with respect to the other values. These values were included into the model to describe the basis of moral convictions.

Part one of the model was constructed by domains, statements and values. In this way, moral convictions were defined by the combination of a statement and a supporting value. An example may clarify this: someone may have the conviction that people have a duty to do good to all animals (statement), because animals are living beings (value). Another person has the opinion that one has the duty to do good to some animals, namely those that are sentient.

The second part of the model, the case-study, was constructed by four cases, judgement categories and arguments in favour and against culling. The cases described the culling of healthy cows and chickens in an animal disease epidemic. These animal species were chosen because in the epidemics mammals as well as poultry were culled. Furthermore, its aim was to learn whether the respondents made a distinction between mammals and birds based on the animals' mental capacities (in the cases the term 'highly developed' was used, which includes a number of mental capacities).

Each case presented an argument in favour of culling and arguments against culling. The arguments in favour were: to stop a disease from spreading (case one), to safeguard the export position of a country (case two), to protect people against eye infections (case three) and to protect human life (case four).

The arguments against culling were: healthy cows and chickens should not be culled, because: animal life is valuable / cows are highly developed (mental capacity to think, feel, and be conscious) / chickens are highly developed (idem) / special and rare breeds are valuable (important for a species, a region, or the ecosystem) / animals have a financial value to people (for instance production animals as a source of income for the farmer) / people have a personal bond with these animals (relational bond) / killing animals is a bad character trait (virtue)/ animals are part of Creation (religion). These eight arguments were the same in all four cases. This was done to study whether an argument was rated differently in the different cases.

Each of these arguments against culling was a 'translation' of a value. In this way the value became an argument against culling. For instance, an example of a moral

conviction is: *animals have a right to life because they are living beings*. In the cases it became an argument against culling, namely: *these healthy cows and chickens should not be culled because animal life is valuable*. As such the role of moral convictions in judgement was determined.

The model in the form of a questionnaire in an Internet survey was sent to veterinarians and farmers in the Netherlands. The veterinarians were approached through their interest organisation, the Royal Veterinary Association of the Netherlands (www.knmvd.nl). The farmers were approached through the following interest organisations: the Dutch Organisation for Agriculture and Horticulture (www.lto.nl), the Dutch Poultry Farmers Organisation (www.nop.nl) and Responsible Farming (www.verantwoordeveehouderij.nl).

The questionnaire consisted of closed questions and open-ended questions. In part one, the respondents were asked to choose one statement per domain. For instance, a respondent is of the opinion that humans are superior to animals, therefore he/she chooses statement one of domain one. Then the respondent rates all the values that support this statement with a number between 0-10, 0 means not at all important for the respondent's opinion and 10 means most important for the respondent's opinion. The higher the rating, the more important he/she considers the value for his/her statement. In an open-ended question the respondents could add another value or a comment.

In the case-study, the respondents gave their judgement on the culling per case. They could choose between: I agree, I partly (dis)agree or I disagree with the culling. They motivated their judgement by rating the argument in favour of and against culling by a number between 0 and 10. The number 0 indicated that the argument was not important at all for their judgement, and the number 10 indicated that the argument was most important.

Due to technical differences in the programming of the Internet questionnaire, it was not possible to compare the ratings of the veterinarians and the farmers as the methodology of both groups was different. The farmers had rated all the values and arguments, whereas the veterinarians had only rated the values and arguments they considered important. This means that not *all* veterinarians had rated *all* values and arguments. The ratings (as shown in the tables) reflect the average rating by the number of veterinarians who had rated this argument.

Still, a comparison between the two groups of respondents was possible by their *choice* of values and arguments. It showed whether just one or a number of values or arguments were important, which were most important, and whether these were the same values and arguments for both groups. The questionnaire is included in appendix one.

Data analysis

Demographic data were obtained for gender, age, and type of animal keeping. The age groups were 21-40, 41-60, and 61 and older. The veterinarians were subdivided into veterinarians specialised in companion animals, production animals, horses or mixed practice. For the farmers the groups were: regular or organic keeping of poultry, cattle, pigs, sheep or goats.

First the percentage of respondents per statement was determined, to establish whether there were statements that were shared by most. The choice of statements by the veterinarians and the farmers were compared. Per statement the average rating of the values was analysed to find out which values were rated high, average or low, and what their relative rating was with respect to each other. The higher the rating the more important the value was in support of their choice of statement.

In the case-study, it was first determined how the respondents had judged per case, to find out whether there were differences between the veterinarians and the farmers. There were three judgement categories: I disagree, I partly (dis)agree, and I agree with the culling. The arguments were rated with a number between 0-10. The higher the rating the more important the argument was for their judgement. Then with the average rating of the arguments in favour and against culling, it was determined per judgement category and per case which arguments were rated high, average or low, b) what their relative rating was with respect to each other

The ratings were not normally distributed, which was an indication that the rating was subjective. This was expected in a study which describes opinions. The rates were not categorized into equal groups, but were categorized on the basis of their subjective meaning: that is their importance. This was done because moral convictions in themselves are subjective, therefore the rating of the arguments was subjective, and the result of the personal interpretation of the respondents. Therefore they were categorised into rated low (0-4.9) average (5-6.9) and high (7-10). As such their relative importance could be established with respect to other values and arguments.

Statistical analysis of the ratings was performed with SPSS 15 for Windows. By means of the Kolmogorov-Smirnova test it was established that the rating was not normally distributed. Therefore, the Mann-Whitney test ($P<0.05$) was used to identify possible significant differences in rating..

Results

A total of 863 veterinarians and 762 farmers filled in the Internet questionnaire they had accessed via the website of their organisation. It was not possible to determine the response rate, because it was not possible to determine how many people had visited the website.

Demography

Most veterinarians were male (66%), 49 % were found in the age group 31-50, 22% specialised in production animals and 33% in companion animals, 61% had been involved in an epidemic, and 14% were no longer practising.

Most farmers were male (78%), 62% were found in the age group 41-60, and 71% had been involved in an epidemic. Most farmers were regular (as opposed to organic) cattle farmers (42%), followed by regular pig farmers (22%), and 3% were organic farmers.

The Central Bureau of Statistics in the Netherlands (CBS, www.cbs.nl, retrieved 25 June 2008) provides demographic data of the Dutch population. According to these data, the ratio male to female is 1:1, and the highest percentage of the Dutch population is found in the 40-65 age range.

Moral convictions

Most veterinarians had chosen the statements: humans are superior to animals (80%), animals have value (100%), people should do good to all animals (79%), and all animals have a right to life (82%). Most farmers had chosen the statements: humans are superior to animals (85%), animals have value (100%), people should do good to all animals (78%), and all animals have a right to life (65%). See table one.

Table 1 The percentage of respondents per statement for each of the four domains

Domain	Statements	Total group Veterinarians	Total group Farmers
Position	Humans are superior to animals	80	85
	Humans and animals are equal	20	15
	Animals are superior to humans	0	1
Value	Animals have value	100	100
	Animals have no value	0	0
Do good	People should do good to all animals	79	77
	People should do good to some animals	20	22
	People don't have to do good to animals	1	1
Right to life	All animals have a right to life	82	65
	Some animals have a right to life	15	31
	Animals have no right to life	3	4

Percentages rounded off

Two large groups were identified consisting of most respondents: a group with respondents who considered humans to be superior, the S group (80% of the veterinarians and 84% of the farmers) and a group with respondents who considered both to be equal: the E group (20% of the veterinarians and 14% of the farmers). Therefore, only the results for these two groups were analysed further.

As compared to the total group of veterinarians, the S group veterinarians included more men (72%), were older (48% in the 41-60 age group), 24% worked as a

production animal veterinarian, 65% had been involved in an animal disease epidemic, and 15% were no longer practising as a veterinarian.
As compared to the total group of veterinarians and the S group, the E group included more women (59%) and were younger (49% in the 21-40 age group), 29% had a companion animal practice, 54% had been involved in an animal disease epidemic, and 8% were no longer practising as a veterinarian.
As compared to the total group of farmers, the S group farmers consisted of more men (84%), were older (65% in the age group 41-60), and 89% were regular farmers and 3% organic farmers.
As compared to the total group of farmers and the S group, the E group consisted of more women (42%), and were younger (37% was in the age group 20-40 and 57% in the age group 41-60), 81% were regular farmers and 4% organic farmers.

Ratings of values by the S and E veterinarians
In table two the ratings by the group S and E veterinarians are presented. The highest ratings are shown in this section.
For domain one (hierarchical position), the S group veterinarians rated all values between 4.7–6.7. *Animals cannot think as well as humans* was rated relatively the highest with a rating of 6.7. The E group rated *animals are living beings* 9.0, rated *animals are sentient* 8.9 and rated *animals are important in the ecosystem 8.2*,
For domain two (value of animals), the S and E group both rated all values, except the *religion or philosophy of life* value between 7.0–8.6. The E group rated some values significantly higher than the S group.
For domain three (to do good), the S and E group both rated the values *animals are living beings, are sentient,* and *are important in the ecosystem* between 7.3 and 9.1 The E group rated the first two values significantly higher than the S group.
For domain four (right to life), the S group rated *animals are living beings* 7.8, and rated *animals are important in the ecosystem* 7.3. The E group rated these two values significantly higher (8.3 and 8.0 respectively) than the S group and rated *animals have an urge to live* 7.0.
For all four domains and for both groups the religion or philosophy argument was rated average (5.8 – 6.5).

The ratings of values by the livestock farmers
In table three the ratings of the values by the S and E farmers are presented. For domain one the S group farmers rated all values relatively low, between 1.6 – 5.3. The argument *animals cannot think* was rated relatively the highest with a rating of 5.3. The E group rated *animals are living beings* 8.4, rated *animals are sentient* 8.0 and rated *animals are important in the ecosystem* 7.3.
For domain two the S and E group both rated all values, except the religion or philosophy of life argument high, between 7.6–8.6. The S group rated the argument

Table 2 Average ratings of the values by the S and E group of the veterinarians

Domain	Position		Value		Do good		Right to l.ife	
Statements	Humans are superior, because:	Humans and animal are equal, because:	Animals have value, because:		People should do good to all animals, because:		All animals have a right to life, because:	
Values	S	E	S	E	S	E	S	E
Animals are living beings		9.0	7.4	7.7	8.7 s	9.1 s	7.8 s	8.3 s
Animals are not/are sentient	4.7	8.9			8.2 s	8.8 s	5.8 s	6.9 s
Animals cannot /can think	6.7	6.2			4.8 s	5.7 s	4.3 s	5.5 s
Animals cannot/can distinguish between right and wrong	5.9	4.7						
Animals should be able to fulfil their life-cycle							5.8	6.2
Animals have an urge to live							6.6	7.0
Animal species are important in the ecosystem	4.8	8.2	8.1 s	8.6 s	7.3	8.1	7.3 s	8.0 s
Animals are useful to people			7.8 s	7.5 s				
People have a relationship with animals			8.3 s	8.6 s				
People become a better person by being good to animals					6.1	6.1		
My religion or philosophy of life tells me so	6.2	6.0	6.5	6.1	6.2	6.0	5.8	6.0

s=significant differences between group S and E. Not computed for domain 1, because the S and E group had chosen different statements.

Table 3 Average ratings of the values by the S and E group of the farmers

Domain	Position		Value		Do good		Right to l.ife	
Statements	Humans are superior, because:	Humans and animal are equal, because:	Animals have value, because:		People should do good to all animals, because:		All animals have a right to life, because:	
Values	S	E	S	E	S	E	S	E
Animals are living beings		8.4	8.3	8.4	8.5	8.6	7.0	7.2
Animals are not/are sentient	3.9	8.3			7.9s	8.4s	6.4s	7.7s
Animals cannot/ can think	5.3	5.7			4.5s	6.0s	4.2s	5.6s
Animals cannot/ can distinguish between right and wrong	4.7	5.5						
Animals should be able to fulfil their life-cycle							5.2s	7.2s
Animals have an urge to live							6.2s	7.2s
Animal species are not/are important in the ecosystem	4.9	7.3	7.6	7.6	7.0s	7.6s	6.8	7.4
Animals are useful to people			8.6s	7.8s				
People have a relationship with animals			7.9	8.0				
People become a better person by being good to animals					4.2	4.3		
My religion or philosophy of life tells me so	1.6	2.2	5.4	4.7	2.0	2.3	1.9	2.3

s=significant differences between group S and E ($p<0.05$). Not computed for domain 1, because the S and E group had chosen different statements.

animals are functionally useful to people significantly lower than the E group.
For domain three, the S group rated the values *animals are living being 8.5,* rated *animals are sentient* 7.9*,* and rated *animals are important in the ecosystem* 7.0. The E group rated *animals are living being* 8.6, rated*, animals are sentient* 8.4, and rated *animals are important in the ecosystem* 7.6. The latter two values were rated significantly higher than by the S group.
For domain four, the S group rated the argument *animals are living beings* 7.0. The E group rated *animals are living beings* 7.2, rated *animals are sentient* 7.7, rated a*nimals should be able to fulfil their lifecycle 7.2*, rated *animals have an urge to live* 7.2 and rated *animals are part of the ecosystem* 7.4.
For all four domains and for both groups the religion or philosophy of life argument was rated relatively low (1.6 – 5.4), and rated the highest in domain two.
The veterinarians and the farmers could be compared by the choice of values they considered important for their convictions. For both groups the same values were important. Furthermore, the relative differences between the S and E group were similar. Religion or philosophy of life and virtue were important for neither, but were more important for the veterinarians than for the farmers.

Case-study
The respondents were asked to give their judgement on the culling of healthy animals in four different cases (table four). Most veterinarians and farmers disagreed or partly (dis)agreed with the culling to stop the disease from spreading, to safeguard the export position of a country, or to protect human health (eye infections). Culling to protect human life was agreed on by most. More veterinarians than farmers partly (dis)agreed. Often more farmers than veterinarians disagreed.
More respondents from the S group agreed with the culling and more respondents from the E group disagreed in all cases. In case 1 to 3 the number of respondents of the E group who agreed with the culling was low.
Table five gives the rating of the argument in favour of culling per case. It showed that the higher the rating of the argument in favour of culling, the lower the rating of the arguments against culling (compare table five and six). The argument *healthy cows and chickens should be culled to protect human life* was rated the highest even among the respondents who disagreed. It was rated 9.4 by the S group veterinarians and 9.3 by the E group veterinarians. It was rated 9.4 by the S and 9.0 by the E group farmers. The respondents from the E group of the veterinarians and the farmers often rated the arguments in favour lower than the group.
Table six gives the rating of the argument '*animal life is valuable, therefore these healthy cows and chickens should not be culled*'. This was the argument against culling that had been rated the highest. In all four cases the S and E veterinarians rated this argument high. The S and E farmers were more diverse in their rating,

Table 4 Judgement by the S and E groups of the veterinarians and farmers in the four cases in percentages

Judgement	Respondents who disagreed with the culling		Respondents who partly (dis)agreed with the culling		Respondents who agreed with the culling	
Row: groups Column: cases	S	E	S	E	S	E
Veterinarians						
Case one Healthy cows and chickens are culled to stop the disease from spreading	15	28	65	66	20	7
Case two Healthy cows and chickens are culled to safeguard the export position of a country	29	45	56	51	14	5
Case three Healthy cows and chickens are culled to protect human health (eye infections)	35	51	51	45	14	4
Case four Healthy cows and chickens are culled to protect human life	5	12	28	49	67	39
Farmers						
Case one Healthy cows and chickens are culled to stop the disease from spreading	23	46	55	51	22	3
Case two Healthy cows and chickens are culled to safeguard the export position of a country	23	56	53	42	22	3
Case three Healthy cows and chickens are culled to protect human health (eye infections)	34	56	47	35	19	10
Case four Healthy cows and chickens are culled to protect human life	7	28	24	34	70	38

Percentages rounded off

Table 5 Rating of the arguments in favour of culling by the S and E respondents in the four cases

Row: judgement	Respondents who disagreed with the culling		Respondents who partly (dis)agreed with the culling		Respondents who agreed with the culling	
Row: groups Column: cases	S	E	S	E	S	E
Veterinarians						
Case one Healthy cows and chickens should be culled to stop the disease from spreading	5.9	5.1	8.1	7.9	9.1	8.7
Case two Healthy cows and chickens should be culled to safeguard the export position of a country	6.1	5.8	7.0	6.7	7.6	7.7
Case three Healthy cows and chickens should be culled to protect human health (eye infections)	6.0	5.5	7.2	6.8	7.8	8.6
Case four Healthy cows and chickens should be culled to protect human life	8.2	8.5	9.1	9.0	9.4	9.3
Farmers						
Case one Healthy cows and chickens should be culled to stop the disease from spreading	5.8	4.1	8.0	7.2	8.7	9.5
Case two Healthy cows and chickens should be culled to safeguard the export position of a country	6.5	4.7	7.5	7.3	8.2	7.0
Case three Healthy cows and chickens should be culled to protect human health (eye infections)	6.0	5.3	7.7	8.3	8.7s	7.6s
Case four Healthy cows and chickens should be culled to protect human life	7.8	7.1	8.6	8.6	9.4s	9.0s

s=significant differences between S and E per case $p<0.05$

Table 6 Rating of the argument against culling '*animal life is valuable, therefore these healthy animals should not be culled'* by the S and E group

Judgement	Respondents who disagreed with the culling		Respondents who partly (dis)agreed with the culling		Respondents who agreed with the culling	
Row: groups Column: cases	S	E	S	E	S	E
			Veterinarians			
Case one	8.1 s	8.9s	7.7 s	8.2 s	7.3	8.6
Case two	8.2 s	9.0 s	7.6 s	8.2 s	6.9	8.5
Case three	8.2 s	8.9 s	7.7 s	8.3 s	7.1 s	9.1 s
Case four	8.1	9.0	8.2 s	8.8 s	7.5 s	8.3 s
			Farmers			
Case one	7.5	7.6	6.8	7.6	5.9	4.0
Case two	7.6	7.4	6.6	7.2	6.0	8.5
Case thee	7.4	7.4	6.6 s	7.6 s	5.4 s	7.7 s
Case four	6.6	6.6	6.7 s	8.1 s	6.0	7.5 s

s=significant differences between S and E per case $p<0.05$

For both the veterinarians and the farmers the S group respondents rated this argument (significantly) lower than the E group. The rate of this argument was lower that the rating of its corresponding conviction and decreased in rating when the rating of the argument in favour increased.

The other arguments against culling were rated low between 3.8 – 4.8 or average, between 5.2 and 6.6 by the veterinarians. The E group rated them lower than the S group. The farmers rated these arguments low, between 3.2 – 4.9. The higher the rating of the argument in favour of culling was, the lower the rating of the arguments against culling.

In general, the respondents who partly (dis)agreed with the culling had already rated the arguments in favour of culling higher than the arguments against but did not fully agree with the culling.

Discussion

In this paper the results of a survey among veterinarians and farmers are presented. The aim of the study was to describe their moral convictions about animals, the role of these convictions in judgement on the culling of healthy animals in an animal disease epidemic, and the possible differences between the two groups

A model for moral convictions and judgement

For the survey a model was constructed based on values that were proposed by animal ethicists for an animal's moral importance (Warren 1997). These values were chosen because it was important to describe morality with a moral vocabulary: a terminology specific for moral issues to express the underlying moral basis of one's convictions. Furthermore, discussions about animals in the academic realm and in public debates are both concerned with the question: *what is morally right and wrong in the treatment of animals and why.*

In the academic animal ethics debate these values serve to distinguish between species, e.g. rationality (Kant in Warren 1997 Scruton 2007), or include all species, e.g. life (Schweitzer in Warren 1997). If rationality is the decisive value, then killing a rational animal is considered morally wrong because a rational animal has more moral importance that an animal that is not considered rational. However, in reality the justification of animal use and treatment is not only dependent on certain properties of the animal but also on the context. For instance killing an insect does not require the same justification as killing a cow. However, killing cows for food is acceptable but culling cows in an epidemic is problematic.

For comprehensive insight into the dynamics of convictions in judgement, knowledge about the underlying values is not sufficient and needs further clarification in the context of a specific situation (Cohen et al. 2009). In this respect, animal ethics values are useful to clarify the nature of convictions, but in order to be useful for policy-makers in the drawing up of new preventive and control policy, it is required to know how these values are weighed against a diversity of interests in a certain context. Moral convictions then are the starting-point for judgement, but for individuals or groups, this starting-point may be different in their interpretation in a specific situation.

Diversity in moral convictions

The respondents had chosen a diversity of statements, but included the highest percentage of respondents: the S group and the E group, which were identified among the veterinarians as well as the farmers. The results show that there were more similarities than differences between the veterinarians and the farmers and their S and E group. These similarities were seen in the choice of statements and in the priority order of the values. The majority of all the respondents were of the

opinion that animals have value, that one should do good to all animals and that all animals have a right to life. Furthermore, these statements were supported by the same values. The differences between the S and E groups were found in the rating of the values and the arguments, and in judgement were gradual.
Comparison of the veterinarians and the farmers was not possible with respect to the rating of the values and arguments, due to differences in the programming. However the two groups could be compared on the basis of their *choice* of statements, and by the priority order of the values. The differences were gradual. In the case-study comparison was possible on the basis of judgement, and the priority order of the arguments. In all cases the differences were gradual.
The moral convictions of the veterinarians and the farmers were based on a number and the same values. This supports the multi-criteria account for moral importance of animals as proposed by Warren (Warren uses the term moral status) and does not support animal ethicists who argue that one value only is necessary and sufficient for moral importance (life: Schweitzer in Warren and Taylor 1986, sentience: Singer 1995, subject-of-a-life: Regan 1993, rationality: Kant in Warren and Scruton 2000).
In the case-study the argument *healthy cows and chickens should not be culled because animal life is valuable* was rated high, and other arguments were rated lower. This suggests that for judgement only this value was the most important, which stands to reason, since the cases were about culling. However it is argued that for judgement, this value was necessary but not sufficient. In the public debate other issues were important as well, such as the relational bond between the animals and their keepers, and the value of special breeds. Therefore, the value of life is the starting-point of judgement, but other values are necessary for a balanced weighing of arguments in favour and against culling.
Warren's multi-criteria account acknowledges that people and animals have a long-standing and complex bonding that is often determined by the nature of the relationship. Furthermore, people have other moral responsibilities towards domesticated animals in a human society than towards wild animals in their natural habitat. Finally, as the result of changes in the rural area, such as the emergence of other forms of animal keeping, and further knowledge of animals and their mental capacities, set in a culturally diversified pluralistic society, people's convictions over time have changed. Therefore in the complex and dynamic interactions with animals, and the complexity of weighing human interests and animal interest, it is likely that more than one value lies at the base of convictions and moral responsibilities in different situations and in different times.

Domain one: hierarchical position of animals
Most respondents were of the opinion that humans are superior to animals. The S group of the veterinarians and farmers based their statement on the same value: insufficient ability to think.

The questionnaire consisted mostly of closed questions. However, per statement the respondents could give an additional answer in an open-ended question. As such it was possible to learn about other important values than those given. The value of this extra information was to verify whether the closed questions were all-inclusive. With respect to this domain, the values were not all-inclusive. For this statement other values were added by the respondents, which they rated equally high or higher than those given. The respondents based this statement not only on an animal's presumed incapability to think, which was not rated high. They also based it on other values, which were presented in the open-ended question. Some respondents referred to the natural food chain on which humans are on top. Other referred to the course of the evolution, and the historical interdependence of humans and animals in which humans dominate and eat animals. However, the reasoning in support of a superior position was more often reversed: humans are superior, *because* they dominate.

The veterinarians and the farmers who considered humans and animals to be equal based their statement on the same values: both humans and animals are living beings, both are sentient beings, and both are important in the ecosystem.

Domain two: value of animals

The veterinarians and farmers valued animals highly for their intrinsic value as living beings as well as for their functional and relational value for people and for their value in the ecosystem. This means that the 'old' value of animals as having a functional importance to people, e.g., as providers of food still holds, but that 'new' values have come to the fore which are rated equally high and are likely to exert substantial weight in the weighing of human interests against animal interests. This was already demonstrated in the public debate about the culling: the old financial-economic value of animals was weighed against their intrinsic and relational value.

Domain three: to do good

Most respondents were of the opinion that people should do good to all animals. In the open-ended question, respondents pointed out that a superior position of humans does not mean that people have no moral responsibilities to animals. On the contrary: because people dominate animals, depriving them of their natural environment and behaviour they have a responsibility to properly care for and protect them. This showed clearly in domain three, with most respondents being of the opinion that all animals should be treated well and should be protected.

Domain four: right to life

More veterinarians than farmers were of the opinion that all animals have a right to life. This could be explained by the nature of the practice. Veterinarians in the first place aim to heal animals, and farmers keep and kill animals for food production.

Even though in both practices animals are killed, this does not contradict the view that animals have a right to life. It may indicate that animals should not be killed wantonly. A right to life therefore should be seen in context. Killing for food, killing animals that are considered a pest or killing a very sick animal were considered justified, which was supported by previous research findings (Rutgers et al. 2003). Our study showed that culling healthy animals for economic or human health reasons, when alternatives are at hand, was not supported by most.

Judgement and the influence of moral convictions

In the cases, values became arguments against culling. For the farmers as well as the veterinarians, the value of animal life was the core argument against culling. Its rating was high but not absolute, that is the rating decreased when the argument in favour increased. This was seen in the other arguments against culling as well. Though the latter arguments were not rated high, they may have been important for judgement as a collective group against culling.

Most veterinarians and farmers partly (dis)agreed with the culling to stop a disease from spreading, to safeguard the export position and to avoid eye infections. They did not fully agree or disagree. This could be due to the collective strength of the arguments against culling or to a lack of information about the risks involved. Many respondents remarked on the need to first assess these risks. For their judgement they needed more information about the spreading of the disease, the animal welfare problems, the impact on the economy, the risk and severity of the eye infection, or the risk that people might die from the disease. The respondents also expressed the need to first consider alternative measures before deciding to cull. Vaccination was mentioned the most often, followed by reducing livestock movements and producing on a more regional scale, swifter action after an outbreak, and the protection of slaughter men against infection.

These options had not been included in the questionnaire because the aim was to clarify the dynamics of moral arguments only. In reality of course, many other arguments are considered for judgement.

The dynamics of moral convictions in the public debate

Based on the results it is argued that moral convictions do play a role in judgement. Their strength in a public debate on an animal issue is determined by the issue as well as their rating. A certain moral conviction can be rated high by an individual or in a certain type of animal keeping. In the public debate, its rating as an argument is under the influence of the case with its specific interests and values, or it can have a constant rate. The veterinarians and the farmers, who considered humans and animals to be equal, rated the values higher and the arguments against culling higher, and more were against the culling. Therefore, it is argued that a person who values his or her convictions highly, will value these convictions highly as an argument

against culling. Therefore, arguments in favour of culling must be valued higher than the arguments against for this person to agree with culling.

For example, in Dutch society it is generally recognised that animals are sentient beings with an intrinsic value. This recognition is already laid down in the Dutch Animal Experimentation Act (www.minvws.nl) and the Animal Act (www.minlnv.nl). This requires that people should treat animals with respect, and killing animals needs thorough justification. However, the public debate about the culling of healthy animals in the epidemics showed that respect for the intrinsic value of animal life did not lead to consensus about the acceptable reasons to cull healthy animals. This means that though people may hold the same conviction, they do not necessarily have the same opinion as to the justification of culling. For example, one person may value animal life highly, which can only be overruled by essential human needs, for example when human life is at stake. For another person, animal life is valuable, but not as valuable as for the first person, and can be overruled by economic reasons (in this example it is assumed that human life is considered more essential than economic reasons). Therefore it is argued that even though two persons may value animal welfare and animal life similarly, the one person may value them higher in a specific case than the other person, which may explain the opposition during the epidemics.

Convictions and judgements are also shaped by social influences. The S group included more men and older people and the E group included more women and younger people. Compared to the veterinarians, the farmers' S group was larger and the E group smaller. This could be explained by the social structure of the groups. The Dutch livestock sector is a rural and commercial, male-dominated type of animal keeping with a largely functional bond with the animals. The nature of the animal keeping may also explain the size of the S and E group. In a male-dominated, commercial practice like the livestock sector, one is likely to find more S respondents. As compared to the farmers, the veterinary practice in The Netherlands includes more women and the majority of veterinarian students are female (www.knmvd.nl retrieved June 2010).

Animal welfare implications

One of the core responsibilities of people towards all animals is our duty to care for their health and welfare and to protect them from harm. This was clearly expressed in domain three.

Therefore, new policy for the prevention and control of animal diseases should not only acknowledge the ethical aspects of the culling of animals, but should also focus on measures to avoid animal welfare problems as much as possible. New policy, in which animal welfare is one of the core concerns that is not easily outweighed by economic interests, will likely be supported in society.

Animal welfare issues could be addressed by for instance applying emergency vaccination-to-live, by a selective lifting of the transport ban to avoid overcrowding and allowing access to animals, and by training the slaughter men. Ultimately, preventive vaccination, if possible, would be the best way to reduce the risk of an outbreak and its inevitable animal welfare problems.

Conclusions

In this paper the results of an empirical survey to identify and describe the moral convictions of a group of livestock farmers and veterinarians is described. Furthermore, the role of these convictions in judgement on the culling of healthy animals in an animal disease epidemic is described.

The veterinarians and the farmers shared the same moral convictions about animals. The majority were of the opinion that humans are superior to animals, that animals have value, that people should care for and protect all animals and that all animals have a right to life. More veterinarians considered animals to have a right to life than farmers. Their moral convictions were based on a number of values, such as the possession of life, sentience, and the importance of an animal species in the ecosystem. It is argued that these values constitute the fundament of their moral convictions about animals, upon which people's moral responsibilities towards animals are largely based.

In a case-study, the two groups judged similarly. Most veterinarians and farmers either disagreed or partly (dis)agreed when healthy animals were culled for to stop the disease from spreading, to safeguard a country's export position, or to prevent eye infections in people. Most respondents agreed or partly agreed with culling to protect human life. The most important argument against the culling was that animal life is valuable.

In both the veterinary and the farmers group, two dominant groups were identified: called S and E. The S group considered humans to be superior to animals. The E group considered both to be equal. The S group included most respondents and was larger among the farmers. As compared to the E group, it consisted of more men and older people. The S respondents rated their moral convictions and arguments lower, and a higher percentage agreed with the culling of healthy animals.

It is argued that a person who values animal life highly, will value animal life highly as an argument against culling. Therefore, arguments in favour of culling must be valued higher than the value of animal life for a person to agree with culling.

It is concluded that knowledge about the dynamics of convictions and judgement, in a specific context, contribute to a better understanding of opposing views on the culling of healthy animals in an animal disease epidemic.

With this knowledge new prevention and control policy can be developed which aims for more support in Dutch society.

Acknowledgements
We would like to thank Ing. FA Steenstra and Dr. Ir SJ Oosting for their valuable contribution to the statistical analysis of the results. We would like to thank Prof. dr. I. Weeda for her valuable contribution to the development of the questionnaire, and M. Williams and S.M. Greene MSc. for editing the manuscript. This article is part of the research project entitled '*New foundations for prevention and control of notifiable animal diseases*' that is funded by The Netherlands Organisation for Scientific Research (NWO).

References

Anderson E 2004 Animal rights and the value of nonhuman life. In: CR Sunstein MC Nussbaum eds, Animal rights, current debates and new directions. US, Oxford University Press 277-299

Anthony R 2004 Risk communication, value judgements, and the public-policy maker relationship in a climate of public sensitivity toward animals: revisiting Britain's foot and mouth crisis. Journal of Agricultural and Environmental Ethics 17(4-5) 363-383

Armstrong SJ, RG Boltzer 2003 General introduction on animal ethics. The Animal ethics reader Routledge 1-10

Bentham J 1789 Duty to minimize suffering. In: PAB Clark A Linzey eds, Political theory and animal rights. London Pluto 135-137.

Berentsen PBM, AA Dijkhuizen, AJ Oskam 1991 A dynamic model for cost-benefit analyses of foot-and-mouth disease control strategies. Preventive Veterinary Medicine 12 (2-13) 229-243

Carruthers P 1992 The animals issue. Moral theory in practice. United Kingdom, Cambridge University Press

Cohen NE, EN Stassen, MAPM van Asseldonk 2007 Social-ethical issues concerning the control strategy of animal diseases in the European Union: a survey. Agriculture and Human Value 24(4) 499-511

Cohen NE, FWA Brom, EN Stassen 2009 Fundamental moral attitudes to animals and their role in judgement. An empirical model to describe fundamental moral attitudes to animals and their role in judgement on the culling of healthy animals during an animal disease epidemic. Journal of Agricultural and Environmental Ethics 22:341-359

Crispin SM, PA Roger H O'Hare and SH Binns 2002 The 2001 foot and mouth disease epidemic in the United Kingdom: animal welfare perspectives. Revue Scientific et Technique International Office of Epizoonotics 21(3) 877-883

Farm Animal Welfare Council 2002 Foot and mouth disease 2001 and animal welfare: lessons for the future. Report of the FAWC, London.

Haaften EH, PH van Kersten 2002 Veerkracht. Report of Alterra, no. 539. Alterra, Wageningen.

Holloway L 2000 Hobby-farming in the UK: producing pleasure in the post-productivist countryside. Anglo Spanish Symposium on Rural Geography, University of Valladolid, Spain

Holloway L 2001 Pets and protein: placing domestic livestock on hobby farms in England and Wales. Journal of Rural Studies 17(3) 293-307

Huirne RBM, M Mourits F Tomassen JJ de Vlieger TA Vogelzang 2002 Verleden, heden en toekomst. Over de preventie en bestrijding van MKZ, report LEI, Den Haag.

Hursthouse R 1999 On virtue ethics. Oxford, Oxford University Press

Kuppen JFH 2009 Democratizing animal biotechnology. Inquiring and deliberation in ethics and governance, thesis, Free University, Amsterdam, the Netherlands

Laurence CJ 2002 Animal welfare consequences in England and Wales of the 2001 epidemic of foot and mouth disease. Revue Scientific et Technique International Office of Epizoonotics 21(3) 863-868

McMahan J 2002 The ethics of killing. Problems at the margins of life. New York: Oxford University Press

Mepham B 2001 Foot and mouth disease and British agriculture: ethics in a crisis. Journal of Agricultural and Environmental Ethics 14(3) 339-347

Mepham B 2004 Farm animal diseases in context. Journal of Agricultural and Environmental Ethics 17(4-5) 331-340

Murphy-Lawless J 2004 The impact of BSE and FMD on ethics and democratic process. Journal of Agricultural and Environmental Ethics 17(4-5) 385-403

Palmer C 1997 The idea of the domesticated animal contract. Environmental Values 6 411-25.
Regan T 1993 The case for animal rights, Berkeley and Los Angeles: University of California Press
Rutgers LJE, JM Swabe and EN Noordhuizen-Stassen 2003 Doden van gehouden dieren. Report Utrecht University
Scruton R 2000 Animal rights and wrongs, London: Demos, third edition
Singer P 1995 Practical ethics, Cambridge University Press, second edition
Taylor P 1986 Respect for nature, a theory of environmental ethics. Princeton, New Jersey, Princeton University Press.
Velde H te N Aarts and C van Woerkum 2002 Dealing with ambivalence: farmers' and consumers' perceptions of animal welfare in livestock breeding. Journal of Agricultural and Environmental Ethics 15 (2) 203-219
Warren MA 1997 Moral status: obligations to persons and other living things. Oxford: Oxford University Press
Wilkie R 2005 Sentient commodities and productive paradoxes: the ambiguous nature of human-livestock relations in Northeast Scotland. Journal of Rural Studies 21 (2) 213-230

Beyond the prevention of harm

Animal disease policy as a moral question

7

Beyond the prevention of harm: animal disease policy as a moral question

FLB Meijboom NE Cohen EN Stassen FWA Brom

Published in Journal of Agricultural and Environmental Ethics 2009 22, 6, 341-359

Abstract European animal disease policy seems to find its justification in a "harm to other" principle. Limiting the freedom of animal keepers—e.g., by culling their animals—is justified by the aim to prevent harm, i.e., the spreading of the disease. The picture, however, is more complicated. Both during the control of outbreaks and in the prevention of notifiable animal diseases the government is confronted with conflicting claims of stakeholders who anticipate running a *risk* to be harmed by each other, and who ask for government intervention. In this paper, we first argue that in a policy that aims to prevent animal diseases, the focus shifts from limiting "harm" to weighing conflicting claims with respect to "risks of harm." Therefore, we claim that the harm principle is no longer a sufficient justification for governmental intervention in animal disease prevention. A policy that has to deal with and distribute conflicting risks of harm needs additional value assumptions that guide this process of assessment and distribution. We show that currently, policies are based on assumptions that are mainly economic considerations. In order to show the limitations of these considerations, we use the interests and position of keepers of backyard animals as an example. Based on the problems they faced during and after the recent outbreaks, we defend the thesis that in order to develop a sustainable animal disease policy other than economic assumptions need to be taken into account.

Introduction

As in many parts of Europe, The Netherlands have been confronted with several outbreaks of notifiable animal diseases: classical swine fever in 1997–1998, foot and mouth disease in 2001, and highly pathogenic avian influenza (bird flu) in 2003. The disease control policy of The Netherlands was in line with the stringent EU regulations for the control of notifiable animal diseases at that time: a non-vaccination policy,[2] and in case of an outbreak, a stamping-out strategy. Animals that are either infected, possibly infected or are a potential carrier of the disease, are culled in order to prevent further spread of the disease. This strategy has raised a lot of public concerns with a clear moral statement. Questions as whether the control of notifiable animal diseases justifies the killing of large numbers of animals, and whether there are alternatives available for mass culling has been on the public agenda ever since (cf. Cohen et al. 2007).

These questions can be addressed from different perspectives, such as the animal, the perspective of food safety and public health, or the animal keeper. In this article, we focus on one specific stakeholder: the keeper of backyard animals. Keepers of backyard animals are a diverse, but substantial group in The Netherlands. An estimated 400,000 citizens keep a few million animals and spend at least a few billion euro's on their hobby each year (Van Velzen and Dekker 2003 Treep et al. 2004 den Boer et al. 2004 Sijtsema et al. 2005). Their position is between the professional animal keeper and the keeper of pets. On the one hand, backyard animals are commonly not kept for commercial purposes. On the other hand and in contrast to pet animals, these animals are not kept in the house. In a quantitative study, performed as part of our research project, the main reasons for keeping backyard animals are human-animal contact and breeding of fancy or rare breeds rather than commercial purposes. They consider keeping animals as a way of living. It is a hobby that is an intrinsic part of their life. This group of animal keepers appears to be extremely critical in their assessment of the policy during the last outbreaks. They argue that their interests and values are not taken seriously (*cf.* Beekman et al. 2007).

In this article, we analyze the background and the implications of this criticism on the animal disease policy.[3] After having presented the harm principle as the obvious justification that underlies recent policy measures, the shortcomings of this principle in the context of animal disease prevention is discussed (see "The Harm Principle as a Problematic Justification of Animal Disease Policy"). Rather than the prevention of harm, the problematic aspect in animal disease prevention is the question how we should weigh the conflicting "risks of harm" claims. With respect to conflicting "risks of harm," the harm principle is silent on how to weigh competing claims of "risks of harm." Therefore, governmental policy needs additional arguments in order to weigh and prioritize different "risks of harm" (see "Risks, Conflicts, and

the Silence of the Harm Principle"). The fact that governments all over Europe are able to deal with diverging and sometimes conflicting "risks of harm" claims shows that, next to the harm principle, additional assumptions are included in the policy and legislation. Currently, these assumptions are veterinary and economic in nature. Consequently, problems of animal disease prevention are addressed as mainly veterinary and economic problems. The criticism of the keepers of backyard animals is a clear indication of the shortcomings of this scope (Section The Criticism of Keepers of Backyard Animals). Keepers of backyard animals do not feel wronged in economic terms, but feel wronged in moral terms. They believe the infringement of their lifestyle is justified on grounds with which they do not agree. Thus, what is presented as a veterinary and economic problem turns out to be a question with a clear moral statement. Ignoring this moral statement can only be at the cost of leaving the values and interests of some groups out of consideration without sufficient justification (Section The Central Role of Value Assumptions and the Problem of an "Economy Only").

The harm principle as a problematic justification of animal disease policy

The current animal disease policy often has a serious impact on both animals and animal keepers, such as the culling of animals and the restrictions of transportation. This directly intervenes in the freedom of the individual animal keeper. Nonetheless, these measures are considered to be justified in that they aim to prevent society from further harm, i.e., the spreading of the disease and the subsequent consequences for food production, transport, and trade.

This justification seems to be based on the "harm to others" principle. The most basic interpretation of the harm principle, as was introduced by Mill (1859/1979) and further developed by many other authors (cf. Hart 1961 Feinberg 1984, 1994), roughly states that governmental intervention is justified when it is aimed to prevent harm to others. The principle starts from the ideal that every individual enjoys maximum freedom that is still consistent with equal liberties of his fellow citizens. Therefore, it is only justified to restrict the liberty of person A in order to prevent that person from causing harm to person B, who can be a specific person, but also a member of the public in general. Harming is in this context defined as a wrongful setback of interests (Feinberg 1994, p. 4, 34). However, harm as such is not a sufficient condition for evaluating the situation as morally impermissible. If it were a sufficient condition, the moral claim that we ought not to impose harm on others would have serious implications. In a very strict version the claim would imply that broadly accepted practices, such as driving your car is problematic, because it certainly is related to harm for many others. At this point, two additional domains are relevant: intentionality, and care. The harm principle is about harm that is deliberately and intentionally imposed on others or that is the result of obvious carelessness or negligence. The harm principle can justify strong interventions in the

freedom of, for instance, an animal keeper, who deliberately tries to harm others by contributing to the spread of a disease. Furthermore, the harm principle can be applied, if one is confronted with negligence. For example, it is assumed that the outbreak of classical swine fever in The Netherlands in 1997 has been caused by a lorry-driver that used to transport pigs in a region of Germany in which the virus for classical swine fever was detected. His truck was not properly disinfected and as a result millions of pigs had to be killed as part of the attempt to bring the disease under control (Stegeman et al. 2000 p. 186). Although, the outbreak was not the result of a deliberate choice to harm others, the involved person obviously has made serious mistakes for which he can be accused.

However, in practice, only but very few agents in the animal sector really intend to harm others. Furthermore, outbreaks also occur even if there is not a situation of negligence. Out of perfectly decent, prima facie plausible motives some acts can impose a serious risk of an outbreak. For instance, feeding cows with commercial feed that contains bones and brains from animals was not done out of cruelty towards the animals or with the intention to endanger animal health. Nonetheless, it has been directly related to the outbreak of mad cow disease in the UK in the 1990s. This illustrates that, in the practice of animal disease policy, a justification of the government intervention by reference to the harm principle only is less straightforward. Only part of all current government interventions can be sufficiently justified by this principle.

In answer to this, it can be argued that the harm principle can also be interpreted in a less restricted way. Brink (2007), for instance, shows that the harm principle also can be interpreted as: "A can restrict B's liberty in order to prevent *harm to others*" He distinguishes this, so-called HP_2-version from the more restricted HP_1-version that states that: "A can restrict B's liberty to prevent *B from harming others*." It is clear that HP_1 only justifies intervention if "the target herself would be the cause of harm to others." HP_2 also allows intervention in order to prevent harm to others, "whether that harm would be caused by the target or in some other way." In this case B need not intend to harm or even to be fully aware of the harm that may result from his actions. This last version seems to be more in line with what is at stake in animal disease policy. Reasons for intervention are not restricted to the fact that animal keepers directly harm others, but government intervenes because their actions may impose harm on others. It is a *risk* of harm. The BSE feed restrictions, which were designed to reduce the spread of BSE, are a good example. The so-called ruminant-to-ruminant feed ban implies the prohibition of the feeding of ruminant animals, e.g., cattle, sheep, and goats, with animal proteins of mammalian origin. The introduction of this prohibition entails an intervention in the freedom of several actors in the animal food sector. Nevertheless, it is considered to be an issue that has to be subject of governmental law and policy not because these actors directly harm others if they feed their animals with animal proteins of mammalian

origin, but because it involves a risk of harm if animals that are herbivores by nature are fed with feed from animal origin. Therefore, from the less restrictive interpretation of the harm principle, the government is allowed to introduce such compulsory measures.

However, even this less restrictive interpretation of the harm principle is not sufficient to justify all measures that are part of animal disease policy. Governments often are confronted with a web of different, overlapping, but also conflicting claims of harm, rather than with a clear distinction between the harmers and those who are harmed. The tension between commercial actors in the livestock sector and keepers of backyard animals can highlight this point. Both groups do not aim to harm each other and they sincerely aim to prevent an outbreak of an animal disease. Nonetheless, they differ with respect to the view on what risks of harm are acceptable. For instance, commercial keepers may consider the presence of actors who keep animals for reasons of hobby as a risk factor, because they are less organized and operate in a less standardized way and thus the traceability of possibly infected animals is low. Consequently, this way of animal keeping may jeopardize the business security of the commercial animal keeper. On the other hand, keepers of backyard animals do not consider this assumed risk of harm for the commercial sector a sufficient justification for a restriction in their freedom of lifestyle. They are convinced that their animals are not the cause of disease outbreaks, and do not contribute to a further spread of the disease. A recent study on the highly pathogenic avian influenza virus in The Netherlands in 2003 substantiates their conviction (Bavinck et al. 2009). They even may claim that these commercial keepers and their focus on trade and export are a risk to their idea of the good life and their way of caring for their animals.

In such cases, the problem is not that one partner will be harmed by another if the government does not intervene, but that both partners anticipate running a *risk* to be harmed by each other, and ask for government intervention. In order to deal with such problems, the government needs tools to weigh and assess conflicting claims of harm and to cope with the risk domain of harm. These are tools that the harm principle cannot provide.

Risks, conflicts, and the silence of the harm principle

Given the fact that European governments are confronted with conflicting claims of stakeholders who anticipate running a *risk* to be harmed by each other, and who ask for government intervention, a justification of government intervention based on the harm principle only becomes complicated. The conflicting claims and the aspect of risk complicate the government's decision to choose the option that preserves the most freedom.

First, the conflicting claims of stakeholders illustrate that governments have to deal with various kinds and amounts of harm. Confronted with conflicts of legitimate

claims, the government has a serious priority problem. They have to compare and evaluate the different claims in order to be able to intervene and prevent. This implies a process of assessing "the types of harm, the amounts of harm, and our willingness, as a society, to bear the harms." (Harcourt 1999 p. 182) In this process the harm principle does not provide much guidance. Even stronger, "the harm principle is silent on those questions." (Harcourt 1999 p. 182) The principle only shows that doing harm is morally not permissible and that an infringement of personal liberty is allowed in order to prevent harm. The principle, however, does not provide a tool to compare and value conflicting risks of harm nor does it indicate which of the conflicting risks of harm should prevail. To make such a comparison and to decide how to address the conflict, one needs additional arguments.

Second, the aspect of risk illustrates that policies have to deal with the probability that a specific action or type of action results in a harm. The policy is not only about limiting harm, but also about reducing the risk that harm will occur. This is especially relevant, because the policies are not merely focused on the control during an outbreak. Governments also formulate strategies for the prevention of notifiable animal diseases. In those cases, the domain of probability plays an even more central role than during an outbreak. This implies that governments do not only have to assess the various types of risk, but also have to assess the risk that harm will occur because of a specific action or practice. In these situations, reference to the harm principle only is not enough to justify government intervention. On the one hand, weighing "risks of harm" confronts policy makers with the aspect of uncertainty. More then once, there is no clear risk, but only a certain probability on certain harm related to a particular action. Simply ignoring or silencing the uncertainty is often no option as the case of the control of BSE or "Mad cow disease" in the UK illustrates. Since 1986, BSE is known as a fatal neurodegenerative disease that affects cattle, but it was only in 1996 that the UK government announced that BSE was linked to a novel human disease that is fatal for humans: the variant Creutzfeldt-Jakob disease (vCJD). Moreover, this disease appeared to be almost certainly caused by consuming BSE-contaminated food. The governmental authorities, however, first were silent about the uncertainty and assured the public that no safety issues were involved in the consumption of beef and that all BSE-related health issues were fully under control. However, at some point the government had to announce that beef consumption could have serious adverse health effects and that they had already known this for some time but had not conveyed the uncertainty they faced. It appeared that the authorities had been erroneously taken the "absence of evidence" as "evidence of absence." (Mepham 2004 p. 331) As a consequence, the UK-government has been severely criticized (House of Lords 2000). This criticism is not so much based upon the knowledge that becomes available after the crisis, but on the way the government ignored dealing with and communicate on the uncertainty

they were faced with. Confronted with uncertainty, it is possible to determine what action is preferable, given the available evidence. In these situations extra moral tools, such as the precautionary principle can guide one's decisions.

On the other hand, dealing with the aspect of risk in the claims of stakeholders is more than mere risk calculation. Risk (R) can be defined as the probability (P) of the occurrence of a hazard (h): $R = P \times h$. Therefore, a probability of 0.0001 on the occurrence of a hazard that has a seriousness of 100 leads to the same result as if we are confronted with a hazard with a seriousness of 0.1 and a probability of 0.1. However, if the 100-unit hazard implies the death of a whole city and the 0.1-unit hazard some extra noise for all citizens of that city, because of a train passing by every 30 min, then the risks are differently valued and the risk of the death of a whole city needs stronger justification than the risk of more noise. Although the calculation results in the same figures, the example illustrates that identifying hazards as risks and the assessment of those risks are not the result of pure and value-free calculation (Jensen and Sandøe 2002 Rasmussen and Jensen 2005). Every identification of a hazard as a risk is based upon value-laden assumptions, and moral decisions always (implicitly) play a role in the weighing of risks. This is no different with respect to the control of animal diseases (cf. Anthony 2004 Jensen 2004). In this process the harm principle can be action guiding, because it says to choose that option that preserve most freedom. However, it cannot be the only tool, because of the above-mentioned silence on how to evaluate and weigh different types and amounts of harm. For instance, in their study on the highly pathogenic avian influenza virus in The Netherlands in 2003, Bavinck et al. (2009) conclude that "the probability of infection is much smaller for hobby flocks than for commercial farms," but at the same time that "as birds are kept outdoors, backyard flocks may be more at risk for introductions of AI strains (…)." They argue that this can be explained, because "the probability of infection is most likely determined by a complex combination of determinants as the number of animals, the type of species or breeds present, the number and type of contacts between flocks, and the sanitary measures that are put in place." (pp. 252–253).

To decide in such a context, a government needs in addition to the harm principle, value-laden assumptions to deal with both the conflicts and with the risk domain of the claims of harm. Only these value assumptions can help to determine what risk of harm should be addressed, even if it is at the cost of leaving another risk unaddressed. For example, if public health is highly valued, one can argue that addressing risks of harm with respect to human health should always prevail over risks of other kinds of harm. Only based on such additional value-laden assumptions it is possible to evaluate the risk aspect of harm and to make choices between conflicting claims of harm. Given this claim, it appears that governments all over Europe make such evaluations and have specific value assumptions. In spite of the shortcomings of the harm principle, they are able to deal with the conflicting

risks of harm related to animal disease prevention. This leads us to the conclusion that a focus on these basic assumptions is necessary to understand the criticism of the keepers of backyard animals on the animal disease policy. Before going into the details of the currently used value assumptions, we shortly focus on the criticism from the keepers of backyard animals on the animal disease policy.

The criticism of keepers of backyard animals

Keepers of backyard animals are no strict opponents of animal disease policy. However, most of them were very critical of the policy and interventions during the last outbreaks, especially of the lack of differentiation between the different groups of animal keepers (cf. Beekman et al. 2007 Treep et al. 2004). A short analysis of their problems with the methods of prevention and control at the time of the outbreaks is helpful in illustrating the shortcomings of the harm principle and in explicating the additional value-lade assumptions used in the current policies.

First, keepers of backyard animals believe they have been wronged by the current policy measures. They consider their hobby as a predominantly private affair (Sijtsema et al. 2005), with its own internal values. The reason to keep animals is part of their idea of the good life. It is not just a hobby; it is part of their lifestyle and an essential domain of who they are and what they consider worthwhile in life. In other words, keeping animals is important to their identity. Therefore, policy measures that entail the risk of the culling of animals do not only jeopardize the lives of the animals themselves, or the interests of a certain animal practice, but are considered a serious infringement of one's way of life. They believe that animal disease policy directly interferes with one of their most important freedoms, i.e., to choose one's own life plan that fits one's identity. Apparently, the government evaluated this infringement of freedom as less important than the harm to the public at stake, but this evaluation does not directly follow from the harm principle.

Second, keepers of backyard animals also believe they have been wronged, because they believe that the current policy underestimates the public goods related to their way of keeping animals. They consider the policy measures to signal disrespect with regard to public interests that are promoted by keeping animals for reasons of hobby. It is emphasized that the keeping of animals for recreational purposes results in goods of which its value goes beyond the private level. For instance, the breeding of rare or endangered species is considered as such a good. Also those forms of amateur livestock keeping that represents a type of rural life that has almost disappeared as a result of processes such as the systematic increase of scale in agriculture, urbanization, and industrialization, contribute to goods that are highly valued by the public. Nonetheless, these public goods were, up until recently, not enough reason to provide the keepers of backyard animals a more protected

position in the policy. Again, this illustrates the use of additional assumptions next to the harm principle.

Third, these animal keepers claim that the current regulation is far too stringent or even disproportionate, because they believe that they play no role in the outbreak.

Fourth, keepers of backyard animals argue that they are forced to take measures that they do not only consider as too stringent, but also morally unacceptable. For instance, they experience the obligation to keep the animals inside under very harsh restriction as too stringent, but also as morally problematic given the animal welfare consequences.

On top of this, the culling of healthy animals is considered as morally unacceptable. The moral concerns did not only cover moral unease with the killing of animals as such. They believe that perfectly healthy animals are killed purposelessly[4] and that they were forced to act in a morally objectionable way that leaves them with the idea that they betrayed their animals.[5] At the last two points, the additional moral assumptions become most explicit. The problem is not a discussion on the rightful interpretation of the harm principle, but on arguments and values that are used to assess the harms at stake and to evaluate "our willingness, as a society, to bear the harms."

In summary, keepers of backyard animals consider themselves to have been wronged not because they do not agree with the importance of the harm principle, but because they do not agree with the way the possible harms are valued, how the risk domain of harm is assessed, and how the conflicts of harms are addressed. It is clear that the criticism of keepers of backyard animals on governmental intervention is not on the harm principle as such. It is much more the result of people's feeling of being wronged by the intervention, because they do not share the underlying moral assumptions and evaluations that result in addressing some risk of harm, while leaving others unaddressed. More in general, keepers of backyard animals do not feel to be taken seriously as stakeholders with interests that are worthwhile protecting and with animals with which they have a special relationship. To understand this criticism, we have to focus on the value assumptions that underlie the current policy.

The central role of value assumptions and the problem of an "economy only" view

The justification of the government intervention as part of animal disease policy often implicitly includes a trade off of freedom against other values. In practice, especially economic and veterinary considerations play a crucial role. This bias can easily be understood by the history of animal husbandry in Europe, which has been developed to ensure "food security," i.e., to secure the production of safe food for all, policy, market structures, and technologies aim to increase food production and facilitate free trade. Consequently, this focus can be recognized in the animal disease policies too. There is a clear tendency to assess animal diseases and its consequences

in economic terms only. For instance, the decision of the European Union to adopt the former non-vaccination policy was informed by veterinarian arguments, but mainly justified on economic grounds. It was calculated that the economic costs of preventive vaccination were higher than the costs involved with controlling an epidemic. Furthermore, it was argued that a non-vaccination policy stimulates free market trade of animal products between countries, who have adopted this policy (cf. KNAW/Royal Academy of Sciences 2002). This illustrates that the animal disease policy has been mainly focused on economic trade and has evaluated the value of goods merely in terms of its economic benefits.

The current economy-based policies (Dijkhuizen and Morris 1997), however, have become subject to serious criticism. On economic arguments, it has been stressed that it is highly questionable whether this policy strategy is the most cost efficient. For instance, the outbreak of classical swine fever in 1997 was extremely costly for all involved partners. The Dutch government had to compensate farmers, but in spite of the compensation the farmers were financially harmed, and the national and international reputation of the Dutch pig farmers was negatively affected. This illustrates that in the long run, it is not so certain whether this policy is sound in economic terms. Another example is the criticism of the calculations that underlie the stamping-out strategy during the 2001-foot and mouth disease. This has been criticized, because the policy turned out to have a serious impact on the tourist industry too. This was not part of the original risk-benefit calculation. A similar claim can be made with respect to the socio-psychological damages to the involved stakeholders entailed by the stamping-out policy that have been ignored in the calculation. On top of this, the recent outbreaks provided a lot of relevant epidemic knowledge that shows some risk calculation to be flawed and some measures to be less relevant than they were expected to be.

Nonetheless, the most profound problems are with the economy-based approach itself. The criticism of keepers of backyard animals signals three broader problems with this approach. First, it illustrates a too limited view of whose interests have to be taken into consideration and who should be seen as a stakeholder who may run a risk of harm as a result of policy intervention. The emphasis on trade and export entails that stakeholder interests are only valued and taken into account as far as they can be assessed within an economic framework. The interests of stakeholders that do not easily fit within this framework are often left out of consideration or only play a marginal role. As a result, the role that non-commercial animal keepers play is very modest. From the perspective of trade, their interests and claims are often subservient to those of the livestock sector that trade and export animals and animal products.

A second point of criticism concerns the overall aim that underlies the evaluation of harm as a legitimate reason for state intervention. Although all agents are considered to be entitled to be protected by the government against harm, what counts as harm

is evaluated from the aim to stimulate free market trade of animal products between countries. As a result, the issues that do not easily fit within an economic framework tend to be left out of consideration in the translation of risks of harm into an economical risk-benefit analysis. For instance, the fact that keeping animals is important to the identity of keepers of backyard animals is difficult to translate into economic sound language or in terms of a contribution to free trade. Consequently, an economy-based approach hardly can deal with the importance of this lifestyle aspect. This is problematic, because the infringement of a person's way of life needs a justification other than the argument that it does not fit in an economic framework. Meaningful actions and views on the good life of citizens who keep animals for reasons of hobby are regulated in a way that is unacceptable for them, because the decisions are based upon economical considerations that they do not share and that do not reckon adequately with the lifestyle domain that is violated. This problem also holds for the above-mentioned public interests that are related to keeping backyard animals for reasons of the breeding of rare breeds or endangered species. Not all of these goods may contribute to food production or to export, but they have public value.

Third, the economy-based approach can deal with only a limited number of views of the animal and the human-animal relationship. The animal is mainly conceived as a commodity. Consequently, the relationship between human and animal are primarily defined in terms of commodity and owner. From this perspective, the animal has a value as far as it is, or can become part of export and trade. Consequently, policy measures that entail the risk of the culling of animals are acceptable if it guarantees future trade. This view is problematic. On the one hand, because empirical research has shown that the public no longer considers arguments based on economic benefit and export only sufficient to justify the culling of healthy animals or to cause very severe animal welfare problems (Treep et al. 2004 p. 55ff Noordhuizen-Stassen et al. 2003 pp. 43–44). Animals are now commonly conceived as subjects whose value cannot be reduced to their economical worth. On the other hand, the idea of the human-animal relationship as an owner-commodity relationship does not fit with the relationship keepers of backyard animals have with their animals. They value their animals and the relation with them fundamentally differently. They are owners of the animal, but do not value the animals for financial reasons only. Consequently, the government justifies the culling of animals and other preventive measures on grounds they do not share.

These three problems of a strong emphasis on economic considerations in dealing with conflicting risks of harm show that this strategy may be effective, in the sense that it results in priority rules that one needs to apply the harm principle. However, it disregards the plurality of values and norms in society. It is effective only because it forces us to discuss issues of animal disease control and prevention as merely economic and veterinary problems, while the main problem of those who criticize

the policy starts in a moral disagreement about how non-economic considerations should be valued.

Conclusions

In this article, we first have shown that the current problem of animal disease policy cannot be reduced to a problem of the rightful interpretation of the harm principle. The control of animal disease is a matter of dealing with conflicting claims of "risks of harm" that requires an assessment of the types of harm and the probability that a harm may occur. In this process the harm principle is of less guidance. Additional assumptions are needed in order to justify government interventions.

Second, we have argued that these additional assumptions cannot be reduced to economic terms. It requires an interdisciplinary interaction of science, ethics, and society. This is the lesson that can be learned from the criticism of the keepers of backyard animals. Apparently, the disapproval may seem as the opinion of just a minority group. The above analysis, however, shows that their criticism is linked to a discussion with strong connections to non-economic beliefs and values. The problem is a moral one. The basic assumptions that underlie the preventive measures are not shared by the keepers of backyard animals. If one aims to develop a sustainable animal disease policy, this implies that conflicting claims with respect to risks of harm cannot be settled by translating all claims into economic or even monetary terms. As long as not all stakeholders agree on the moral importance and value of the economy, forcing us to discuss the problems in financial terms does not settle the real problem. Only if the moral assumptions of the current policy are explicated and the scope of what counts as relevant for animal disease control is broadened can a more robust animal disease policy be developed.

Therefore, the moral values and principles of all involved have to be taken seriously. Ignoring this moral statement can only be at the cost of leaving the values and interests of some groups out of consideration without sufficient justification.

Acknowledgements

This article is part of the research project entitled "New foundations for prevention and control of notifiable animal diseases" that is funded by The Netherlands Organisation for Scientific Research (NWO). We would like to thank the anonymous reviewers for the *Journal of Agricultural and Environmental Ethics* for their comments.

Footnotes

[1] A notifiable animal disease is one that must be immediately reported to the authorities and includes all animal diseases subject to national and/or international regulations.

[2] In the subsequent years after the epidemics the Dutch government initiated a debate at the European level to re-evaluate the non-vaccination policy. As a result vaccination-to-live is since 2006 allowed for foot and mouth disease and highly pathogenic avian influenza based on the EC directive 2006/14/EC.

[3] The articles in the Special Issue of the Journal of Agricultural and Environmental Ethics on animal diseases (vol 17 nr. 4–5, 2004) provide an interesting and helpful context for our discussion.

[4] Note that the evaluation of the killing as purposeless is the result of a different evaluation of the risks involved with the other options for action.

[5] This is based upon the results of 24 in-depth interviews that have been held with representatives of organizations for keepers of backyard animals by Cohen as part of the research project "New foundations for prevention and control of notifiable animal diseases."

References

Bavinck VA, M Bouma M van Boven M Bos E Stassen A Stegeman 2009 "The role of backyard flocks in the epidemic of highly pathogenic highly pathogenic avian influenza virus (H7N7) in the Netherlands in 2003", Preventive Veterinary Medicine, 88 (2009), 247–254

Beekman V, HCM de Bakker RPM Graaff 2007 Ethische aspecten dierziektebestrijdingsbeleid; Een oefening in participatieve multi-criteria analyse, Den Haag: LEI.

Brink D 2007 "Mill's Moral and Political Philosophy", Stanford Encyclopedia of Philosophy, http://plato.stanford.edu/entries/mill-moral-political [accessed 26 May 2008]

Boer M den, L Cante B Dekker B Dyvesteyn H Geveke R Jansen M Kort R van der Mark 2004 De crisis tussen mens en dier, evaluatie bestrijding AI crisis, Utrecht: Berenschot Groep

Cohen NE, MAPM van Asseldonk EN Noordhuizen-Stassen 2007 "Social-ethical issues concerning the control strategy of animal diseases in the European Union: an inventory", Agriculture and Human Values, 24/4, 499-510

Dijkhuizen AA, RS Morris 1997 Animal health economics: principles and applications. Post Graduate Foundation in Veterinary Science, University of Sydney, Sydney, Australia

Feinberg J 1994 Freedom and fulfillment, Princeton: Princeton University Press

Feinberg J 1984 The moral limits of the criminal law, Volume 1: Harm to others, Oxford: Oxford UP.

Harcourt BE 1999 "The collapse of the harm principle", The Journal of Criminal Law & Criminology, 90/1, 109-194

Hart HLA 1961 The concept of Law, Oxford: Clarendon Oxford UP

House of Lords 2000, Select Committee appointed to consider science and technology, Science and technology - Third Report, 23 February 2000, www.parliament.the-stationery-office.co.uk/pa/ld199900/ldselect/ldsctech/38/3801.htm [accessed at 20 August 2008]

Jensen KK, P Sandøe 2002 "Food safety and ethics: The interplay between science and values", Journal of Agricultural and Environmental Ethics, 15/3, 245-253

KNAW/ Royal Academy of Sciences 2002 Bestrijding van mond- en klauwzeer, 'stamping out' of gebruik maken van wetenschappelijk onderzoek, Amsterdam: Koninklijke Nederlandse Akademie van Wetenschappen

Mill JS 1859/1979 On liberty, Edited with an introduction by Gertrude Himmelfarb, London: Harmondsworth, Penguin Books

Noordhuizen-Stassen EN, LJE Rutgers JM Swabe 2003 Het doden van gehouden dieren, ja mits…of nee tenzij, Utrecht: Utrecht University

Rasmussen B, KK Jensen 2005 The hidden values. Transparency in decision-making processes dealing with hazardous activities, CeBRA Project Report 5, Copenhagen: Schultz.

Sijtsema S, S van der Kroon E van Wijk-Jansen M van Dijk G Tacken B de Vos 2005 De kloof tussen de hobbydierhouders en overheid; over passie voor dieren en perceptie van wet- en regelgeving die voor landbouwhuisdieren gelden, The Hague: LEI

Stegeman A, A Elbers H de Smit H Moser J Smak F Pluimers 2000 "The 1997-1998 epidemic of classical swine fever in the Netherlands", Veterinary Microbiology, 73/ 2-3, 183-96.

Treep L, T Brandwijk J Olink F Tillie M Veer A Verhoek 2004 Verkenning hobbydierhouderij, Expertisecentrum LNV, nr. 255, The Hague: EC-LNV

Velzen K van, I Dekker 2003 Niet ruimen, maar prikken! Hoe Nederland opnieuw massaal gezonde dieren liet afmaken, report Tweede-Kamerfractie SP, The Hague

General discussion

8

The aim of this study was to contribute to new prevention and control policy for notifiable animal diseases, by giving more insight into the diversity and dynamics of moral convictions and judgement concerning animals in Dutch society.
In the first part of this chapter, the methodology used in the surveys and the results are discussed. The second part is a theoretical discussion about the dynamics of moral convictions, judgement, and normative policy-making.

Methodology and results

Identifying moral issues
Between European member states, and in pluralistic societies like the Netherlands, one is likely to find social-cultural differences in moral convictions concerning animals. At the European level, this means that in the design and harmonisation of policy concerning animals, careful consideration is required regarding what is considered morally acceptable in each member state.. A number of animal issues need to be approached at the EU level, because there is extensive trade of animals and their products between the member states. Some animal issues, such as animal disease policy, are the subject of concern, and reveal the difficult balance between international economic interests and views on the morally acceptable use and treatment of animals (Eurobarometer 2007).
The EU non-vaccination policy only allows free trade between member states in which the animals are not vaccinated and yet remaining disease-free of certain notifiable diseases. In case of a disease outbreak, the disease-free status had to be regained by a method that proved to be morally problematic: stamping-out the disease by culling infected and healthy animals within a certain area. However, the resistance against this method required a rethinking of this policy. Drawing-up new policy for member states that are connected through liberal trade and EU regulations, but that may not share the same views on what is acceptable treatment of animals, is a challenge
The current research was not a study of differing views on animals in the member states, although this is recommended for future research in chapter two. Animal disease policy is still drawn up at the European level, and revisions should be approached at this level first. Our European survey (chapter two) was an inventory among stakeholders in the member states about issues concerning animal disease policy and priorities for future policy. It was expected that countries that had suffered one or more epidemic disease outbreaks would have other priorities than those member states that had not had such an experience. This was not substantiated. This could have been due to the low response rate, and with responses mainly from Chief Veterinary Officers and veterinary organisations. Therefore, the importance of veterinary issues was emphasised, as spreading of the disease to other member states infecting more animals was a major risk. Regional

differences were found though, with the north-western and the southern member states, irrespective of outbreak-experience, choosing preventive measures as their first priority, which from a veterinary point of view is the best action. From a moral point of view this was the preferred action as well, and will be discussed later in this chapter.

Eastern European member states chose social, psychological and financial consequences. Stakeholders from the Netherlands, a member state that had experienced major epidemic outbreaks of classical swine fever, foot and mouth disease and highly pathogenic avian influenza, valued animal welfare and related moral issues high. In the other member states, these issues only came at the third or fourth place.

In the Netherlands, animal welfare and the intrinsic value of animal life have a dominant place in the public morality, policy-making and legislation (www.minlnv.nl). This justifies a new perspective on animal disease policy at the national level that has such a strong impact on animals and people. It is a challenge to follow new EU policy, while at the same time doing justice to Dutch public morality concerning animals. However, not that much is known about the public morality. One recent survey performed by Rutgers et al (2003), clarified morally justified reasons for killing animals for different reasons: culling for economic reasons was only supported by 16% of the respondents. These results were relevant for our study to a point, but it did not fully reveal the underlying moral reasons why people were in favour or against culling. Therefore, to learn more about the Dutch public morality about culling, three surveys were performed: among backyard animal keepers, and at the national and at the stakeholder level.

Backyard animal keepers were the first stakeholder group that was studied (chapter three). Many backyard animals had been culled, especially during the highly pathogenic avian influenza epidemic. The disease control policy did not allow for a distinction between commercial and non-commercial animal practices, even though these practices differed with respect to the nature of the practice and their specific human-animal bond. Some studies (Ziel 2003 Treep et al. 2004 Sijtsema et al. 2005 Raad voor Dieraangelegenheden 2003) had been performed regarding the nature of this practice. However, more information was needed about their priorities for future animal disease policy, and about their views on animals, as this group had manifested itself in the public debate as strong opponents of the stamping-out policy. This opposition needed to be clarified from a moral perspective, to reveal what moral values were at stake. Furthermore, their moral vocabulary used to express their opposition, needed to be clarified to find what values it was based on.

Preceding the survey, a number of interviews were performed with backyard animal keepers. They were representatives and spokesmen of this group and were therefore more knowledgeable on the subject than the average backyard animal keeper. These interviews were important to understand the results of the backyard animal survey

and they pointed out what the driving force was behind their resisting the culling of their animals. Terms such as *respect for life*, *right to life*, a *duty to care for and protect, loss of autonomy,* and *senseless killing* were used. The term '*senseless killing'* showed that this particular situation did not justify the culling.

To analyse the interviews, a method was used of labelling and clustering in value-clusters of our own design. As these moral values were expressed implicitly rather than explicitly, the limitation of this approach was our interpretation of the terminology. However, a useful structure was found in the philosophical animal ethics literature, which lent us guidance how to interpret the expressions for their underlying moral values.

Most respondents in the backyard animal survey did not find it justified to cull healthy animals (89%) provided that sufficient preventive measures are taken. They were in favour of a separate status from commercially kept animals, and supported preventive vaccination to protect their animals. It can be argued that for the backyard animal keepers disagreeing with the culling was the starting-point, which could be modified by external situations. This could be due to the fact that a majority of the respondents (66%) had been involved in an epidemic.

Reflections on the model

The EU survey and the study of the backyard animal practice preceded the national and stakeholder surveys. They yielded relevant results for the design of a model for moral convictions and judgement for empirical studies (chapter four). The model also needed a 'language' that was unequivocal in its meaning, and useful to describe convictions and their basis. Some authors emphasise the importance of external influences for people's conviction about animals, such as culture (Pagani 2007), gender (Herzog 1991 Driscoll 1992 Hills 1993 Fidler 2003 Robertson, Gallivan and MacIntyre 2004 Heleski, Mertig and Zanella 2006 Herzog 2007, our study chapter five and six), age (our study chapter five and six) political view and religion (Driscoll 1992 Heleski, Mertig and Zanella 2006), experience with animals (Pagani 2007 Endenburg 1994, 1995 Miura et al. 2002 Fidler, 2003), physical appearance (Knight and Barnett 2008), and knowledge about animals and their mental capacities (Bekoff 2007). Knight and Barnett found that purpose and knowledge of animal use were important for one's convictions. They furthermore proposed that belief in animals' mental capacities, such as sentience or conscience, defines people's convictions and the acceptability of their use. This they called belief in animal mind and explains why people agree with one kind of animal use and disagree with another. Taylor and Signal (2005) performed a study in which attitudes were tested against animals as 'pet' 'pest' and 'profit' (the utility of an animal to humans). This means that in different situations animals may belong in different categories, which in turn is of influence on one's attitude. In the theoretical discussion of this chapter, this discrepancy is discussed in more detail.

The theoretical framework of the model was not based on external influences as mentioned above, but on well-defined moral values that refer to the animal itself and which define *why* animals have moral importance, and therefore *why* people have moral convictions concerning them. In the academic animal ethics literature, values are proposed, which are useful for this purpose. Even though philosophical and empirical ethics usually do not interact, they are concerned with the same question: '*Why are animals morally important?*'

In general, studies usually give information about people's convictions, but usually not about their moral basis: the moral "*why*" of a conviction (Serpell 2004 Herzog and Dorr 2000 Franklin 2007 Eurobarometer 2007). In our model, moral convictions were defined by a combination of the *what* of a conviction, which is one's view with respect to the position, value, doing good and right to life of animals, and the *why* of these views. In other words, on what moral values are these convictions based? This approach was adopted for two reasons. First, the *why* question of convictions gives insight into underlying values that are the basis of views on the right and wrong way to treat animals. Only in this way can one obtain a complete picture of convictions and gain more insight into the source of opposition in an animal debate. Second, the *why* question reflects what our responsibilities towards animals *ought to be* following from these values. It is a self-reflection of society on the moral acceptability of animal use from a vision of a society people would *prefer* to live in. This is reflected in terms such as respect, kindness, compassion, and doing good. In this interpretation, convictions concerning animals are normative. This means that policy should not only concentrate on people's responsibilities and actions; it should reflect intention to do good, based on values and on views on an ideal society. This will be discussed further in the theoretical discussion in this chapter.

The model consists of domains, statements and values. These are the 'building blocks' of moral convictions. The domains reflect the subject of a conviction (position of animals, value of animals, to do good to animals and right to life), the statements reflect the opinion on the subject (e.g *humans are superior to animals*) and the opinions are supported by values (e.g. *humans are superior to animals because animals cannot think*). The statements are the *what* and the values are the *why* of a conviction. This *why* refers to a variety of values: intrinsic referring to characteristics of the animal itself; relational; to the bond between animals and people; usefulness: to their usefulness to people, or to their role in the ecosystem; virtue: to how a virtuous person should behave towards animals; and to religion. The limitations of the model are found in the choice of domains, statements, moral values and cases, which were a given, thus restricting the respondents in their choice.

The choice of the four domains was based on our literature search about issues in animal debates. It is possible that another domain should have been included. For instance, *respect for animal life* is a term which was heard quite often in the culling

debate. It describes a certain attitude to animals. Intuitively most people have a good idea about the meaning of respect. However, this term was not included, because it does not tell one exactly what a respectful attitude is and how one should behave in a respectful manner in a certain situation. It may refer to the right outcome, the right action or to the right character. In the latter case, respect is an expression of virtuous character (Hursthouse 1999). Does respect imply that people should refrain from harming animals, or is one allowed to kill animals in a respectful manner or is killing not acceptable at all? Due to the uncertainty how to interpret respect, the domains *to do good* (domain three) and a *right to life* (domain four) were chosen. Animal welfare has always been and still is the main concern in animal issues. However, from the 1960s onwards a shift was taking place from a welfare discussion to a rights discussion in animal debates (Armstrong and Boltzer 2003, Franklin 2007 Regan 1983 Singer 1995). With these domains it was studied if and how animal welfare and right to life have become part of public morality.

To counteract these limitations, the model allows for adaptations, because domains, moral values and cases can be added or left out, depending on the focus of the study.

On the whole the model is built on subjective terms which may be interpreted differently by different people, because our relationship with animals is subjective. This means that these terms do not have one unequivocal meaning or value. Perhaps the strength of our empirical research may in fact lie in its restrictions. It does not give the personal interpretation of moral values. It gives their average value over a large number of respondents, which is the best way to describe public morality as it is the majority and shared view in society.

In a case-study it was studied if and how convictions were important in judgement on the culling of healthy animals in animal disease epidemics. Four cases each presented a different reason in favour of culling: to stop the disease from spreading, to safeguard the export position of a country, to protect people against eye infections, and to protect people from a disease that can be lethal in humans. These cases reflected the issues about the moral justification of culling. Eye infections only occur when in contact with the highly-pathogenic H7 type of avian influenza. In the case-study this case aimed to clarify whether this infection was considered sufficient reasons to cull, or only when human life is at stake.

The limitation of this approach was that the cases were a simplification of reality with each case giving only one argument in favour of culling. In reality, a number of values and interests are weighed against the value of animal life. Furthermore, the cases did not provided supplementary information with which the respondents could make a risk assessment, (e.g. information about the severity of the eye infection. Is it a mere inflammation or is it a more serious condition?). However, for more insight into a complex issue it was necessary to study one aspect at a time.

Comparison with other methods

In the ethics debate, the term *principle* is often used (Verweij 1998 Mepham 2000). Verweij defines principles as moral norms. In this interpretation, principles are the basis of certain attitudes or actions. Therefore, one can argue that principles are comparable to the statements, the *what* of moral convictions in our model.. However, principles don't seem to focus on the *why* level: the values, upon which a principle rests.

Verweij argues that cases serve to specify principles. However in this way cases do not specify which underlying value of a principle is important. Therefore, principles are too vague in their implications. For instance, in the culling debate the term *respect for life* was often heard. What does this mean in terms of the action that should be taken, and on what values is this based? Are people allowed to cull animals, as long as pain and distress are kept to a minimum, or does it mean that one should not cull animals at all, or that one should cull in a respectful manner. The latter reason needs a clarification of what a respectful manner is?

A number of tools have been developed on the basis of principles in the context of cases. The Ethical Matrix, developed by Ben Mepham (2000), takes three principles as its basis: justice, fairness and wellbeing. The matrix is used to find how in a particular case or policy scenario, these principles are valued for what they imply to the stakeholders involved. In this concept, the principles themselves are not under discussion. The variables are the stakeholders and the valuing. With this method, cases are compared on the basis of their valuing of principles. However, the matrix does not clarify what these principles in fact mean to the stakeholders, and what they are based on. In other words to be of any use, it requires more reflection on the nature of these principles and their interpretation. Furthermore in different cases, other principles may be relevant, as in the current study.

The concept of Reflective Equilibrium (RE) (Verweij 1998 Van Thiel 2009), is based on the dynamics of principles, intuitions and facts in a case. In a case with its case-specific facts, a first judgement is given based on moral intuitions relevant to this case. The aim is to find the underlying general principle from which these intuitions arose. In this process, facts, moral intuitions and principles are reflected upon to reach a new equilibrium. The process is: a case with its facts → first moral judgement based on intuitions → general principle. It is a qualitative tool to be performed by one person, who Van Thiel calls a thinker.

The model of the current study operates the other way around. First the conviction is established which then is weighed and redefined in a case to reach judgement. The process is: conviction → arguments in a case → judgement. Therefore an intermediate step of moral intuitions to find the underlying conviction was not included. Moreover, the model is a quantitative empirical tool for use in stakeholder groups and in society as a whole.

The model is more comparable to the empirical model developed by Van Thiel, who used the RE as a starting-point for normative-empirical research in health care institutions. She argues that in health care, moral intuitions have developed as a result of the nature of the practice and the experience of health care givers and patients. These intuitions she calls moral wisdom. In her study the respondents were asked to formulate their intuitions about, for instance, respect for autonomy of the patient.
In the surveys the respondents were not asked to choose between convictions. Instead they were presented with the building blocks, which were the domains, statements and moral values, to compile their own convictions. Furthermore, a system of numerical rating was used, required for large scale surveys, to statistically describe and differentiate between convictions, and between stakeholders, sexes, age, and other relevant criteria.

Reflection on the surveys
In the national survey 1999 respondents (81%) and in the stakeholder survey 863 veterinarians and 762 livestock farmers participated (of the latter two no information was available about the response rate). This showed that the subject was considered important and enabled us to draw some conclusions. The results showed that the model was indeed useful for this kind of empirical research, because it was possible to distinguish between respondents on the basis of their convictions, values, and judgement.
The results of the national survey and the stakeholder survey among veterinarians and livestock farmers first of all revealed that people indeed have convictions concerning animals. This is likely as animals have long since been part of our human community, in which norms and values guide our behaviour towards others. As people have extensive interactions with animals, certain convictions have been developed. The question is whether these convictions form a coherent and structured whole representing public morality about animals in Dutch society, or merely represent the convictions of a limited group of individuals. For this study, public morality is defined as the entirety of convictions and their supporting values shared by a substantial group, *and* by different groups of people in society.
The results showed diversity in moral convictions, but not as anticipated. By means of the combination of statements, 54 profiles can be distinguished: 3x2x3x3 statements for four domains (for a discussion f profiles see chapter five). However, one profile included most respondents, called the A profile. A second important profile could be distinguished, called the B profile. The A and B respondents differed with respect to their view on the position of animals with respect to humans (domain one), and with respect to the valuing of their convictions. The A respondents emphasised the differences between humans and animals by stating that humans are superior because humans possess rationality, and because humans

can distinguish between right and wrong. The B respondents who considered humans and animals to be equal emphasised the similarities between the two: the fact that both are living beings, are sentient and are both equally important in the ecosystem. In an open question the respondents could give additional information. This revealed that other values than those given were important. For instance, many A respondents emphasised that the fact that people can and do dominate animals is proof of people's superiority. This is interesting since this opinion follows from what the human-animal relationship *is* in our society and not on what this relationship *should be*. However, the respondents made it clear that from this conviction it does not follow that people have no moral responsibilities towards animals. On the contrary, because people are stewards of animals and nature and dominate animals, people have a duty to care.

All respondents from both surveys were of the opinion that animals have value (domain two). The purpose of this domain was to find if in Dutch society, a shift had taken place from an instrumental value towards other values. This showed that animals were still valued for their usefulness to people, but were equally highly valued for the fact that they are living beings, are part of the ecosystem, have a personal relationship with people and are part of Creation. This means that the 'old' values still hold, but 'new' values have been included.

Most respondents were of the opinion that people have a duty to care for and protect all animals (domain three). Three values supported this view: the fact that animals are living beings, are sentient and are important in the ecosystem. The fact that this duty includes all animals means that values with which one can distinguish between animals, did not seem to be relevant. However, sentience is a distinguishing criterion, as some species are likely to be more sentient than others. Therefore, the fact that this value was relevant means that a duty to care is not dependent on a certain *degree* of sentience.

With the fourth domain (right to life) it was examined whether animals are considered to have a right to life, and to find out if this right is dependent on their importance to people, or follows from certain intrinsic values. Most respondents found that all animals have this right, based on the fact that they are living beings and are important in the ecosystem, which are values of the individual animal and an animal species. For most B respondents, sentience, lifecycle, and urge to live were equally important. This indicates that all animals are recognised as having an interest to live and fulfil the goal of their life independently of the interests of people. However, even if this interest is recognised, a right to life is case-dependent, which will be discussed later.

Most moral values were shared by both groups, but the A respondents valued these values (significantly) lower than the B respondents.

A multi-criteria account for moral convictions

The model served as a bridge between moral convictions and philosophical ethics theory, because it provided a moral language by means of which both can understand each other. It has the potential to make both realms more dynamic and reactive to societal issues. It showed which values were important for an animal's moral importance, and people's moral convictions. While most ethicists link an animal's moral importance to one criterion, for instance rationality (Scruton 2000) or sentience (Regan 1983, Singer 1995), Warren (1997) proposes a multi-criteria account. She argues that in the public morality not only one, but a number of criteria (in the current study these are called *moral values*) are relevant for moral importance. The results confirm Warren's theory, but caution is needed in their interpretation. The respondents were required to value all the values and therefore had to consider their importance with respect to other values. However, had they been asked to give values of their own in an open question, perhaps fewer values or even only one would have been given. However, in the stakeholder survey, the veterinarians gave reason to believe that Warren's theory is correct. In this survey, due to technical differences they only valued values they considered important for their convictions. It showed that not one but a number of averagely or highly valued values supported their convictions.

It is argued that a diversity of moral values form the foundation of moral convictions and constitute the basis of Dutch public morality, as these values were valued high by most respondents in both surveys. One can argue that the choice of values given in the model is not comprehensive and other values should have been included to give a complete picture of important values in Dutch society. However, based on the analysis of the literature and the high valuation of these values in the surveys, the results give an impression of what is considered important in Dutch society.

Differences in the valuation of moral values and arguments and in judgement were found between males and females, and between older and younger people. More A respondents were male and older and more B respondents were female and younger. The B respondents had a more favourable attitude towards animals: they valued their convictions higher and more were opposed to the culling. This could mean that women and a younger generation have other views on acceptable use and treatment of animals. The question is whether a favourable attitude of younger people is proof of change in the public morality? It is argued that this is likely, because established moral views that are not sufficiently flexible to meet new developments in society, may be overruled by views of younger people who do have the capacity to critically react to these developments.

This study and many others (Herzog 1991) found gender related differences in attitude towards animals. Women place more emphasis on the personal relationship and show more empathy about animal suffering (Hills 1993, our study chapter

three). A recent development in animal ethics is called care ethics (DeGrazia 1999), which focuses on the importance of a caring and relational bond with animals instead of a functional relationship. Domain two showed that a functional value was still highly valued, but that other values were equally important. Domain three showed that caring should include all animals, independent of their functional use. This caring may be interpreted differently in different situations and between domestic and wild animals, with a stronger duty towards animals under our care.
Furthermore, in society a diverging development into 'visible' and 'invisible' animals is taking place. On the one hand there is an empathic and personal relationship with animals one can see and interact with. On the other hand invisible animals in the livestock sector, laboratories and fur farms are increasingly depersonalised and instrumentalised. However, in our society, the emphasis on care, and the fact that increasingly women are increasingly found in key positions in society and in traditionally male-dominated professions, such as the veterinary practice, will exert their influence. It would be interesting to study in what way women and younger people employed in these 'invisible' animal practices may influence the way in which the practices are managed based on a different notion of the acceptable treatment of these animals.

Judgement
In the case-study it was studied whether moral convictions exert an influence in judgement on the culling of healthy animals. The results demonstrated that convictions only predict judgement to a certain extent, because in the case-study, respondents with the same convictions were found in all three judgement categories: disagree, partly disagree/agree, and agree.
As compared to the national survey, more veterinarians and livestock farmers were against culling. This may be due to the fact that these groups are knowledgeable about animals and therefore are more critical about the stamping-out strategy.
In the national survey, more A respondents were in favour of culling and more B respondents were against culling. Arguments against culling each reflected a moral value from one's convictions, relevant to the case. More A respondents valued the arguments in favour of culling higher, and the arguments against culling lower than B. For both groups the arguments were flexible: they were valued lower when the arguments in favour were valued higher. Nonetheless, more B respondents were against culling and had valued the arguments against culling higher and in favour lower. It is argued that people or groups who value their moral convictions relatively high, *therefore* value them as an argument in a case high, and *therefore* are more likely support an animal interest over a human interest. The opposite is also true.
The argument *healthy animals should not be culled because life is valuable* was the most highly valued argument. This in itself was not surprising, since this was the issue in the first place. It was more surprising to find that the other arguments, for instance

the importance of a relational or functional bond between people and animals, the value of rare breeds and the mental capacities of animals, were less relevant. It is argued that these values exerted a collective weight giving further support against culling. With the method used it was not possible to prove this. It would require a new set-up with the value of life as the only argument against culling to examine whether judgement was the same as in the surveys or not. However, these values were identified as important in the epidemics.

How can one explain opposition in the culling debate when convictions and their supporting values are shared? The results showed that differences were gradual and were found in the valuing (rating) of one's convictions, and/or differences in their valuing as arguments against culling, and/or differences in the valuing of the human interest in the cases. Based on the results it is argued that people who value their moral values low/high, therefore value these values as arguments in a case low/high, and therefore are more likely to be in favour/against the culling. This may explain the opposition, which is based not so much on different values but on a different valuation of these values. This will be discussed in more detail in the theoretical discussion in this chapter.

Opposition can also be caused by convictions shared by only few people. In the study, some very small groups were identified. Some respondents were of the opinion that animals are superior to people (national 9%, vet 0.2% and farmers 0.6%), some found that people have no moral responsibilities towards animals (national 3.6%, veterinarians 1.4%, farmers 0.4%), some found that animals have no right to life (national 1.4%, veterinarians 2.9%, farmers 3.5%). Even though these are small groups, their views and voice may be strong in a debate.

Another possibility is that some people are pragmatic, with convictions that depend on the case, or perhaps may not have convictions concerning animals at all. This means that their judgement is only based on the case and circumstances. Another possibility is that some people may as a point of departure always value human interests higher than their convictions concerning animals because they do not value animals, and don't feel any or very little or no moral responsibility towards them, let alone granting them rights. Their judgement is therefore a weighing of human interests and human values. The opposite could also be true, with some people who always value their convictions concerning animal higher than human interests.

Theoretical discussion about the dynamics of moral convictions concerning animals and judgement

This section presents a theoretical discussion on a three-layered concept of moral convictions, the dynamics of judgement, and a three-layered concept of normative policy. Figure one gives a schematic representation of this concept of moral convictions.

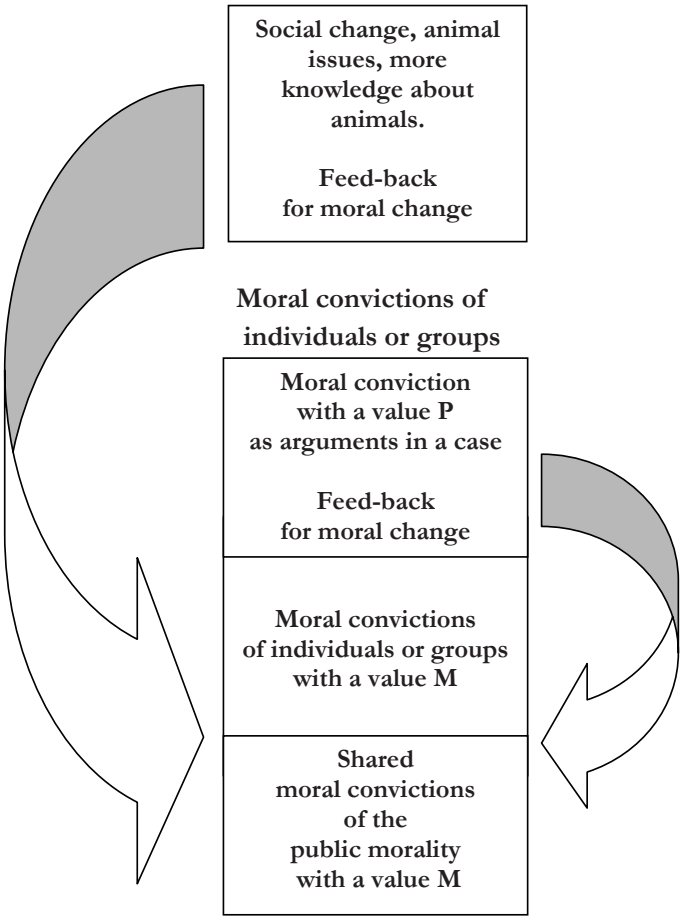

Figure 1 Dynamics of a three-layered concept of moral convictions M= value of a conviction P=value of a conviction in a case.

A three-layered concept of moral convictions

In chapter four, a two-layered concept of moral convictions is presented. The first layer included deeply felt moral convictions called fundamental moral convictions. The second layer included convictions that were relevant in an animal issue.. These were called practical moral convictions. However, the results of the surveys indicate that a concept of moral convictions should consist of three instead of two layers. The first layer includes moral values that are not only important for an individual, but are shared in society as a whole and are therefore part of public morality. They have a certain importance for society. The second layer includes values, which are specific to an individual or a group. They have a certain importance for an individual or group. The value of these convictions is called the M value. The third layer consists of values that are relevant in a public debate about a certain animal

issue, and as such have become arguments in this debate. The third layer does not contain the same set of values all the time. It consists of values that are chosen from the first or second layer for their relevance in a specific case. In different cases, other values that are relevant migrate to the third layer. The value of these latter values is called the P value. The results showed a diversity of values: intrinsic, relational, functional, religious or other, which can be found in al three layers. However, the values of animal life, of sentient animals, and of animals in the ecosystem are important values that are highly valued and are found in all three layers.

Dynamics of judgement

In this section differences between people with respect to judgement are discussed. Based on the results it is argued that when a person values his or her conviction high (M), he or she values the conviction as an argument in a case high and the human interest low, and therefore is more likely to disagree with the culling. This is explained by the following examples which are based on the results of the case-study.

Person A is from the profile A group and person B from the profile B group. People from profile A are of the opinion that humans are superior to animals, that animals have value, that people should do good to all animals, and that all animals have a right to life. People from profile B only differ from profile A in that they consider humans and animals to be equal, and that they value their convictions higher. For further discussion on the profiles see chapter five.

Person A and person B both have the moral conviction: *all animals have a right to life because animal life is valuable.* Person A values this conviction M with a value which is lower than the valuation by person B (see figure one). This value expresses the importance of this conviction for the person. In a case a human interest is at stake, for example *culling to safeguard the export position of a country.* The conviction becomes an argument against culling, namely: *these healthy animals should not be culled, because animal life is valuable*, which person A values with a value P which is lower than the valuing by person B. The P value expresses the importance of the moral conviction in this particular case. It is dependent on the M value of the conviction and the value of the human interest (HI) in this case. Based on the results of the surveys (see chapter five and six) it showed that the P is valued the same or lower than the M value.

Figure two shows the differences between person A and B in the valuation of P and the valuation of HI in the case *'culling to safeguard the export position of a country'*. The X-axis gives the value of the HI, the Y-axis gives the value of P. The results of the case-study showed that the higher the value of HI the lower the value of P. Person A values this HI higher than the P, and therefore is more likely to agree with the culling in this case. Person B values this HI lower than the P, and therefore is more

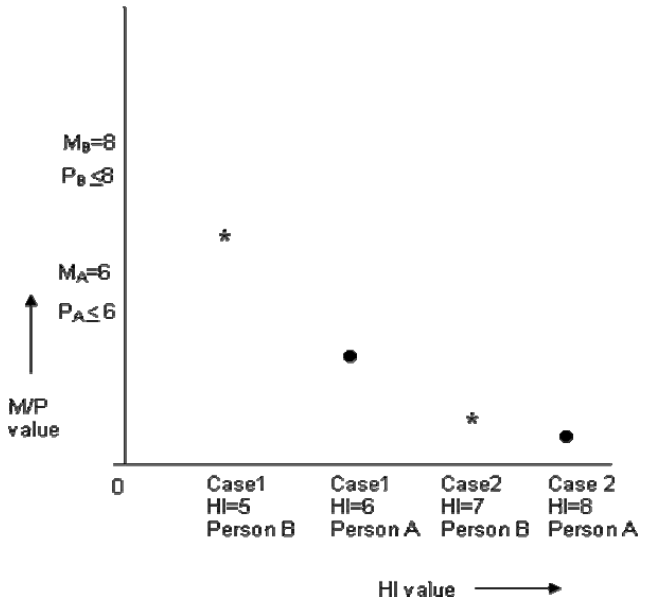

Figure two shows the valuation by person A(●) and B (*) in two cases. Case 1: 'culling to safeguard the export position of a country'. Case 2: 'culling to protect human life'. HI=the value of the human interests (=export position and human life) in these cases. P=the value of the conviction in these cases. The value M, which is the value of the moral conviction, is a constant. The values do not reflect the rates in the case-study.

likely to disagree with the culling in this case.
The case-study also showed that some respondents - even though they had already valued HI higher than P - still only partly agreed. This meant that more information was required to reach judgement. This also implies that people are willing to weigh all the interests and values before reaching judgement. This will be discussed later in this chapter.

Moral change
To explain moral changes over time, one needs to assume that external factors have the potential to change public morality (see figure one). A number of developments in animal use (Rollin 2007 Franklin 2007), and people's impact on the living nature had already led to critical reflections in which the intrinsic value of animals was increasingly recognised and appreciated. An example is animal biotechnology, which has led to a new vocabulary, such as the term *'instrumentalisation'* to express one's concern about this form of animal use. It was indicative of changes in animal use that could not be discussed with the then existing communication tools. The concern is the devaluation of animals to mere instruments for human purposes. It

reflects unease, which goes beyond animal welfare concerns. It is about the *intention* to respect an animal's intrinsic value, which is an appreciation of animals, independent of their value to people. At present, this term has found its way into debates about other forms of animal use, which shows that it was case-born, but is no longer case-bound, and has obtained a place in the public morality.
Moral convictions develop as a result of diversity of changes in society. Society had already undergone changes due to developments in agriculture, intensifying livestock keeping, and new animal practices emerged, such as backyard animal keeping, keeping de-domesticated animals in nature reserves, horseback riding and green care farms. Every now and then certain cases such as epidemics speed up this process of changing convictions. The epidemics had the potential to reshape and re-value these convictions, which will manifest themselves again in future cases.. Only in further research can it become clear whether new or changed convictions keep their new value in a future public debate (figure one) and therefore should be acknowledged in legislation (Mepham 2000). Policy should anticipate that in a future outbreak, the value of animal life and of other values important in the culling debate may re-emerge with a new and higher value, due to their history in previous epidemics.

A normative policy framework of values, freedom and responsibilities
In a complex society like The Netherlands, animal use has diversified, has often become invisible to the public eye, and has given rise to important and fundamental ethical questions. These questions have as much to do with oneself and the society we live in, as with the consequences for the animal itself. It is almost impossible to capture the acceptability of animal use in one conviction. For instance, an animal's right to life, when applied all the time in society as a whole, would make most animal use impossible. For a person to make sense of his or her convictions concerning animals in a complex society, it is argued that animal use and its specific ethical dilemmas are compartmentalised. In each compartment, a specific animal use (e.g. livestock farming, animal experimentation, fur-farming) is valued for its merits and drawbacks specific for the compartment, and weighed against one's convictions. The moral conviction reflects how one *should* behave as a vision of the ideal at that time. Judgement-per-compartment is the result of a P value set against an HI value specific for this compartment (see figure two and three). The P value is not independent from the goal of the animal use and expresses morally acceptable animal use in this particular context. This explains why the killing of animals is deemed acceptable in one compartment, e.g. for food, and is not acceptable in the other (Rutgers 2003). It explains why the same animal species as a companion animal has a higher status than as a laboratory animal (Pagani 2007). The P value therefore is a compromise between one's convictions and the human interest in a compartment. When over time public morality changes, certain animal use may need to be re-valued or may no longer be considered morally justified.

Policy that is reactive to moral change needs to find a new approach. It should not merely focus on moral convictions and their M value, because this disregards the importance of cases and other external influences on the valuing and reshaping of these convictions. Policy that merely focuses on the P value of convictions in cases, is confronted with a diversity of P values between stakeholders and may be based on incidents and therefore has insufficient fundament for future policy.

With a casuistic approach one can discuss animal issues in society *with* society (Jonson and Toulmin 1988). It is an efficient way to identify the value-discussions between and within stakeholder groups, by discussing the importance of convictions in a practical case. However, I do not advocate pure case-based policy-making, because this is a one-level approach. It is only effective at a particular stage of policy-making. Cases are meant to clarify an issue in a particular compartment, and are a way to shape policy into its practical form by stakeholder participation and dialogue. Still this approach is not satisfactory as it takes its justification from the nature of the compartment, without critically reflecting on its justification at the level of public morality. It bears the risk that solutions of an animal issue are sought within the realities of a specific compartment. However, based on the public morality, a government should show intention to do good to all animals, irrespective of their use. Therefore, policy should be independent of and transcend the compartment level. This way justice is done to moral values, showing that an animal is not defined by the setting of a compartment, but by its biological nature determined by the characteristic of the species.

In this section a normative policy approach is proposed. This policy connects public morality and normative policy. It can respond to strong moral convictions with a high M and P value held by different interest groups, to convictions with variable P values, and to the dynamics of moral change. This policy anticipates (technological) developments which may lead to new animal use and new public debates.

A normative policy framework is based on values and visions of the ideal society, in which to do good to animals for the animals' sake is the starting-point. With this framework one can express values, freedoms and responsibilities of all stakeholders at three levels.

The first and fundamental level includes the minimum norms of animal keeping following from the values shared in society, and therefore should be laid down in legislation. It sets the norm for animal health and welfare and should refer to individual animals as well as to non-domestic animals and animal species in the ecosystem.

The second level includes additional norms set down in regulations, to meet further demands by society and stakeholders. It allows for consensus between stakeholders, and between stakeholders and society, to equally distribute risks, values, responsibilities and freedom.

At the third level, individuals and stakeholders can realise their *interpretation* of values. Freedom of action is only realised at this level, allowing animal keepers freedom to keep animals in a way they see fit, as long as it is compatible with the first and second level.

Relevance for prevention and control policy

For new prevention and control policy to be supported within society, more needs to be known about the dynamics of convictions and judgement. Most respondents partly (dis)agreed with the culling to stop the disease from spreading, to safeguard the export position, or to avoid eye infections. In this category, the A group had already valued the arguments in favour of culling higher than the arguments against culling. Still these respondents were not completely for or against culling. This point is called the turning-point. This turning-point is relevant because for the respondents in order to agree or disagree, more information was required about the veterinary, economic and human health risks. This could explain why most respondents only partly (dis)agreed. First, for support and for trust in the government, information should be made available about these risks and about the available knowledge about the spreading and the severity of the disease (for instance animals can recover from foot and mouth disease, but highly-pathogenic avian influenza can be lethal to animals and people). Second, it should be made clear why alternative measures were not taken (such as vaccinating). Third, for a moral problem, policy's basis needs to be normative; therefore its starting-point is the moral perspective. From this perspective, attention should be paid to the moral values of people, animals and the ecosystem, to values specific to the issue, to the moral responsibilities of each stakeholder not only to their own animals, but also to the animals of others, to a stakeholder's freedom of action, and to a just distribution of risk.

With this information, future policy should be able to reflect the three layers of normative policy. Certain shared values from its first layer should find their place in all possible scenarios, because these are the fundaments of public morality. However, policy needs to be developed at the European level first, because animal disease policy is an international issue. In is unlikely that all member states share the same moral values. The European study showed that preventive measures were given priority by most countries. Therefore, prevention policy will gain support from most member states, particularly at this level. In fact, one can argue that prevention is the best morally justifiable option, because it is based on a reduction of risk for all member states, and for the animals and the keepers, and therefore may be the best way to acknowledge the diversity of moral values in the different member states.

In chapter seven, a risk-of-harm policy is discussed, which approaches the issue from the perspective of case-specific risk, harm, and moral values. Its core message

is that policy ought to give consideration to all values of all those involved, and to equally distribute risk-of-harm. Member states can only lend meaning to their moral responsibilities by being allowed freedom of action to protect themselves against disease outbreaks, by means of vaccination or other measures. From this it follows that international policy that does not allow for this freedom, is morally wrong. At this level, more knowledge about the various human-animal relationships and the public morality in the member states is required.

At the national level, in Dutch society, the shared moral values should not only be granted an important place in the realisation of new policy concerning animals and their treatment in general. A government should also show the intention to realise these values for the people as well as the animals' sake. This reflects how society, from a moral perspective, ought to behave towards living and sentient beings.

Policy needs to be developed at the second level of normative policy: the level of the animal practices, as well. Though the nature of practices may differ, their interest not to be harmed by an epidemic is the same. Other than functional human-animal relationships should be considered: for instance the personal or recreational bond between an animal and its keeper, the experiencing of nature with animals as a way of life, and the breeding with a special breed. Morally justifiable policy at this level aims to distribute risk-of-harm between the stakeholders. This requires a reassessment of the boundaries of stakeholders' autonomy, versus their responsibilities towards others. In its moral context, harm means more than an economic harm to the sector. It means that as a result of not being able to care for and protect one's animals against harm done by others, is morally wrong from the perspective of moral values. It does not allow keepers freedom to care for their animals as they see fit. It also means harming a way of life. This refers to a number of moral values. It implies that keeping animals for the production of food, to breed a special breed or for company is more than just that. It is freedom to contribute in a meaningful way to society, the countryside or to the biodiversity of a region, and to feel one with the natural world. However, risk-of-harm means that animal keepers have the moral responsibility to reduce harm to their own animals as well as for other animals and their keepers. It means that this responsibility takes priority over freedom to realise a way of life. This freedom is reflected in the third layer of normative policy.

Morally justifiable prevention and control measures need to weigh the values of all stakeholders equally. Reducing risk-of-harm at this level means that these values should be weighed against the risk of infecting other animals (Bavink et al 2009), the risk to the sector and the export position of a country, the risk of eye infections, and the risk to human life. From a moral perspective, giving priority to economic risk only is morally wrong, because it runs contrary to a consideration of all values.

It is concluded that the public resistance against the culling was not incidental, but was the result of the then existing moral convictions in Dutch society. Current policy has already acknowledged these convictions by shifting away from a non-vaccination policy towards a policy based on preventive measures. These measures include improved early warning systems and risk assessment in other countries. Revised contingency plans for classical swine fever and foot and mouth disease allow vaccination, unless the risk of spreading is low. Increasingly, preventives measures are being improved by quarantine measures and by means of biotechnical solutions, such as biochips and resistance building by immunisation.
It is concluded that this policy meets the demands of current public morality and will therefore gain more support in Dutch society.

General conclusions

This study contributed to new prevention and control policy by describing diversity of moral convictions concerning animals in Dutch society, and the role of these convictions in judgement on the culling of healthy animals. To this purpose a model was developed for empirical research. The model proved to be useful as it gave insight into the public morality, and the diversity of moral convictions in Dutch society and between livestock farmers and veterinarians. Furthermore, it explained how convictions play a role in judgement, and why opinions on the culling were opposed. The following conclusions are drawn.

Moral convictions

- There is diversity in moral convictions in the Netherlands.

- Most respondents considered humans to be superior to animals. The one but largest group of respondents from the national survey and among the veterinarians were of the opinion that humans and animals are equal,

- Most respondents were of the opinion that animals have value, that people should care for and protect all animals, and that all animals have a right to life.

- Moral convictions are based on a number of values. These are intrinsic values; such as the value of animal life, sentience and rationality, functional values; such as the usefulness of animals to people, and the importance of an animal species in the ecosystem, and relational values concerning the human-animal relationship.

- People with the same convictions may differ in the valuation of these convictions.

Judgement

- Moral convictions play a role in judgement.

- Differences in judgement between respondents with the same moral convictions were based on differences in the valuation of arguments against and in favour of culling healthy animals.

- The most important argument against culling was the value of animal life. This argument was valued lower when the argument in favour of culling was valued higher.

- Most respondents from the national survey partly (dis)agreed with the culling of healthy animals for veterinary and economic reasons, and to prevent eye infections. Most veterinarians and farmers disagreed or partly (dis)agreed with the culling of healthy animals for veterinary and economic reasons, and to prevent eye infections. Culling to protect human life was supported by most in both surveys.

- Respondents who considered human to be superior to animals, valued their moral convictions lower than other respondents. Therefore they valued them as arguments against culling lower, and therefore were more likely to agree with the culling. The opposite was also true.

Importance for policy

- For future prevention and control-policy consideration should be given to:
  - shared public morality about animals
  - the moral responsibilities of the stakeholders to their own animals, as well as to other animals and their keepers
  - the interpretation of risk, harm, and values from the perspective of each stakeholder
  - stakeholders' autonomy and freedom of action
  - a just distribution of risk-of-harm

Recommendations for future research

- As most legislation concerning animals, their use and treatment is drawn up at the European level, it is important to study the diversity of moral convictions between the member states.

- Public morality is a dynamic process influenced by social change, animal issues and other external influences. Therefore, it is advised to monitor these dynamics regularly.

References

Armstrong SJ, RG Boltzer 2003 General introduction on animal ethics. The Animal ethics reader, Routledge 1-10

Bavinck VA, M Bouma, M van Boven, M. Bos, E. Stassen, A. Stegeman 2009 "The role of backyard flocks in the epidemic of highly pathogenic highly pathogenic avian influenza virus (H7N7) in the Netherlands in 2003", Preventive Veterinary Medicine 88 (2009) 247–254.

Bekoff M 2007. The emotional lives of animals, New World Library, Novaro California.

Cohen NE, EN Stassen, MAPM van Asseldonk 2007 Social-ethical issues concerning the control strategy of animal diseases in the European Union: a survey. Agriculture and Human Values, 24(4) 499-511.

Degrazia D 1999 Animal ethics around the turn of the twenty-first century. Journal of Agricultural and Environmental Ethics 11: 11-129.

Driscoll JW 1992 Attitudes towards animal use. Anthrozoös 5 (1) 32-39.

Endenburg N, H 't Hart, J Bouw 1994 Motives for acquiring companion animals. Journal of Economic Psychology (15) 191-206

Endenburg N 1995 The attachment of people to companion animals. Anthrozoös 8 (2) 83-89

Eurobarometer 2007 270 / wave 66.1 - TNS Opinion & Social, 200.

Fidler M 2003 Animal status as a response to pet owner experience. Anthrozoös, 16 (1) 75-82

Franklin A 2007 Human-nonhuman animal relationships in Australia: an overview of results from the first national survey and follow-up case studies 2000-2004. Society and Animals, 15, 7-27

Fidler M 2003 Animal status as a response to pet owner experience. Anthrozoos, 16 (1) 75-82.

Heleski CR, AG Mertig AJ Zanella 2006 Stakeholder attitudes towards farm animal welfare. Anthrozoös, 19(4) 290-307

Herzog HA Jr, NS Betchart, R.B. Pittman 1991 Gender, sex role orientation, and attitudes towards animals. Anthrozoös (3) 184-191

Herzog HA 2007 Gender differences in human-animal interactions: a review Anthrozoös 20 (1) 7-21

Herzog HA, LB Dorr 2000 Electronically available surveys of attitudes towards animals. Society & Animals, 8(2) 183-190

Hills AM 1993 The motivational basis of attitudes towards animals. Society & Animals 1 (2) 111-128

Hursthouse R 1999 On virtue ethics. Oxford: Oxford University Press

Jonson AR, S Toulmin 1988 The abuse of casuistry. A history of moral reasoning. University of California Press, Berkeley

Knight S, L Barnett 2008 Justifying attitudes towards animal use: a qualitative study of people's views and beliefs. Anthrozoös, 21(1) 31-42.

Mepham B 2000a A framework for the ethical analysis of novel foods. The Ethical Matrix. Journal of Agricultural and Environmental Ethics, 12, 165-176

Mepham B 2000b "Würde der Kreatur" and the common morality. Journal of Agricultural and Environmental Ethics, 13, 65-78

Mepham B 2001 Foot and mouth disease and British agriculture: ethics in a crisis. Journal of Agricultural and Environmental Ethics. 14(3) 339-347

Mepham B 2004 Farm animal diseases in context. Journal of Agricultural and Environmental Ethics. 17(4-5) 331-340

Miura A, S Bradshaw, H Tanida 2002 Childhood experiences and attitudes towards animal issues: a comparison of young adults in Japan and the UK. Animal Welfare 11 (4) 437-448

Pagani C, F Robustelli, FR Ascione 2007 Italian youths' attitudes toward and concern for animals. Anthrozoös (20)3 275-293(19)

Raad voor het Landelijk Gebied & Raad voor Dieraangelegenheden, (December 2003). Dierziektebeleid met draagvlak, advies over de bestrijding van zeer besmettelijke dierziekten. deel 1, advies. RLG 03/8 RDA 2003/08

Raad voor het Landelijk Gebied & Raad voor Dieraangelegenheden, (January 2004). Dierziektebeleid met draagvlak, advies over de bestrijding van zeer besmettelijke dierziekten. deel 2 Onderbouwing van het advies. RLG 03/8 RDA 2004/01

Regan T 1983 The case for animal rights. Berkeley and Los Angeles: University of California Press

Robertson JC, J Gallivan, PD MacIntyre 2004 Sex differences in the antecedents of animal use attitudes, Anthrozoös 17 (4) 306-319

Rollin, BE 2007 Cultural variation, animal welfare and telos. Animal Welfare 16 129-133

Rutgers LJE, JM Swabe, EN Noordhuizen-Stassen, 2003 Het doden van gehouden dieren. Report Utrecht University

Scruton R 2000 Animal rights and wrongs, London, Demos, third edition

Serpell JA 2004 Factors influencing human attitudes to animals and their welfare. Animal Welfare, (13) S145-1551

Singer P 1995 Practical ethics. Cambridge University Press, second edition

Sijtsema S, S van der Kroon, E van Wijk-Jansen, M. van Dijk, G Tacken, B. de Vos 2005: De kloof tussen de hobbydierhouders en overheid; over passie voor dieren en perceptie van wet- en regelgeving die voor landbouwhuisdieren gelden. The Hague, Landbouw Economisch Instituut

Taylor N, TD Signal, D Tania June 2009 Pet, Pest, Profit: Isolating Differences in attitudes towards the treatment of animals. Anthrozoös 22, 2, 129-135

Treep L, T Brandwijk, J Jolink 2004 Verkenning Hobbydierhouderij The Hague, ECLNV report 255

Van Thiel G 2009 Moral wisdom in the balance. Reflective Equilibrium as a normative empirical model for bioethics. Utrecht University, Utrecht

Verweij M 1998 Moral principles: authoritative norms of flexible guidelines? In: W van der Burg, T van Willigenburg (eds) Reflective equilibrium. Essays in honour of Robert Heeger Kluwer Academic Publishers

Warren MA 1997 Moral status: obligations to persons and other living things. Oxford: Oxford University Press

Ziel T van der 2003 Verzet en verlangen thesis, Wageningen University

9

Samenvatting

In Europa braken tussen 1997 en 2003 drie hoogst besmettelijke dierziektes uit, te weten klassieke varkenspest, mond- en klauwzeer en hoogpathogene vogelpest. De toen geldende bestrijdingsstrategie was gebaseerd op economische belangen en bestond onder meer uit het ruimen van miljoenen geïnfecteerde en gezonde dieren. Dit betrof niet alleen productiedieren, maar ook niet-commercieel gehouden dieren, zoals hobbydieren. Tegen deze bestrijdingsstrategie kwamen protesten, niet alleen van de direct betrokken dierhouders, maar ook in de samenleving als geheel. Dit gaf aan dat het ruimen van gezonde dieren op grond van economische redenen niet meer moreel aanvaardbaar werd gevonden. Dit was reden om nieuwe preventie en bestrijdingsstrategieën van besmettelijke dierziektes te ontwikkelen die meer tegemoet komen aan de heersende opvattingen in de samenleving. Voor dit doel is meer kennis nodig over morele overtuigingen over dieren in de Nederlandse samenleving. Verder moet duidelijk worden of dierhouders in verschillende dierhouderijen verschillende overtuigingen hebben.

Het doel van het onderzoek dat wordt beschreven in dit proefschrift is om de diversiteit van morele overtuigingen over dieren in de Nederlandse samenleving te identificeren en te beschrijven. Verder werd onderzocht wat de rol van deze overtuigingen is op oordeelsvorming over het doden van gezonde dieren in een dierziekte-epidemie. De resultaten kunnen bijdragen aan een beter begrip van morele overtuigingen, onontbeerlijk voor nieuwe preventie- en bestrijdingsstrategieën.

Eerst werd een Europese survey en een survey onder hobbydierhouders uitgevoerd, om meer inzicht te krijgen in de kwesties die in dit verband spelen en in de visies op toekomstig beleid. De meeste lidstaten vonden de sociale, psychologische en financiële kwesties van het hoogste belang en waren van mening dat preventieve maatregelen op de eerste plaats kwamen. Nederland gaf dierenwelzijn en de daarbij behorende ethische kwesties de hoogste prioriteit.
In een onderzoek onder hobbydierhouders werd meer inzicht verkregen in de aard van deze dierhouderij en in hun mening over dierziektebestrijding. De meeste hobbydieren worden gehouden voor gezelschap of om er mee te fokken. Veel hobbydierhouders waren tegen het doden van hun gezonde dieren, omdat deze dieren niet gehouden werden voor de voedselproductie en meer gezien werden als gezelschapsdieren. Verder was men van mening dat deze dieren geen risicofactor waren in de verspreiding van de ziektes omdat ze niet werden geëxporteerd. De meerderheid was voor preventieve vaccinatie van alle gevoelige dieren.

Voor verder onderzoek werd een model ontworpen om morele overtuigingen in de Nederlandse samenleving te identificeren en te beschrijven. Ook kon door middel van het model de rol van deze overtuigingen in oordeelsvorming over het ruimen van gezonde dieren in een epidemie worden onderzocht. Het model als vragenlijst was de basis voor een landelijke en een stakeholdersurvey.

De resultaten van de landelijke survey lieten een diversiteit aan morele overtuigingen zien, waarvan een aantal dominant waren. De meeste respondenten waren van mening dat de mens boven het dier staat, dat dieren waarde hebben, dat mensen goed moeten zijn voor alle dieren en dat alle dieren recht op leven hebben. De een na grootste groep was van mening dat mens en dier gelijk zijn. Deze overtuigingen waren gestoeld op een aantal morele waarden, zoals de waarde van het dierlijk leven, de waarde van dieren die pijn en emoties kunnen voelen, en de waarde van dieren in het ecosysteem. De verschillen lagen in de verschillen in waardering van hun waarden.

De resultaten van een casestudie lieten zien dat de meeste respondenten het gedeeltelijk eens/gedeeltelijk oneens waren met het ruimen van gezonde dieren om verdere verspreiding van de ziekte te voorkomen, om de exportpositie veilig te stellen en om ooginfecties te voorkomen. De meeste respondenten waren het eens met het ruimen van gezonde dieren als mensenlevens op het spel stonden. Het belangrijkste argument tegen het ruimen was: *gezonde dieren mogen niet gedood worden omdat het leven waardevol is.*
Verschillen tussen de respondenten werden gevonden in de waardering van de argumenten en in oordeelsvorming. Respondenten die hun overtuigingen hoog waardeerden, waardeerden deze ook hoog bij de afweging of het ruimen wel of niet moreel acceptabel is.

Een stakeholdersurvey onder dierenartsen en veehouders gaf vergelijkbare resultaten. Ook hier werd een diversiteit aan overtuigingen geïdentificeerd. De meeste dierenartsen en veehouders vonden dat de mens boven het dier staat, dat dieren waarde hebben, dat mensen goed moeten zijn voor alle dieren en dat alle dieren recht op leven hebben,. Meer dierenartsen dan veehouders vonden dat alle dieren recht op leven hebben. Beide groepen baseerden hun overtuigingen op dezelfde morele waarden. Ook hier was het verschil gebaseerd op verschillen in waardering van deze waarden.

Ook hier lieten de resultaten van de casestudie zien dat de meeste respondenten het gedeeltelijk eens/gedeeltelijk oneens waren met het ruimen van gezonde dieren om verdere verspreiding van de ziekte te voorkomen, om de exportpositie veilig te stellen en om ooginfecties te voorkomen. In vergelijking tot de landelijke survey

waren meer dierenartsen en veehouders het oneens met het ruimen. Het doden was wel acceptabel als mensenlevens op het spel stonden. Ook hier was argument tegen het ruimen dat het leven van dieren waardevol is, van het grootste gewicht.
Verder gold ook hier dat verschillen tussen de respondenten werden gevonden in de waardering van de argumenten en in oordeelsvorming. Respondenten die hun overtuigingen hoog waardeerden, waardeerden deze ook hoog bij de afweging of het ruimen wel of niet moreel acceptabel is.

Het wordt beargumenteerd dat morele overtuigingen dynamisch zijn, en uit drie lagen bestaan. De onderste laag bevat de gedeelde morele overtuigingen van de publieke moraal. De tweede laag bevat de morele overtuigingen van een individu of een groep. De derde laag bevat de overtuigingen die worden ingezet als argument in de oordeelsvorming over een bepaalde dierenkwestie.
Deze dynamiek en gelaagdheid van morele overtuigingen moet weerspiegeld worden in gelaagd normatief beleid. Op deze wijze komen waarden, vrijheden en verantwoordelijkheden van alle stakeholders worden meegenomen. De eerste laag betreft de minimumnormen die gelden voor het houden van dieren in alle dierhouderijen en voortkomen uit door de samenleving gedeelde waarden van de publieke moraal. Deze waarden moeten vastgelegd zijn in wetgeving. De tweede laag bestaat uit toegevoegde waarden gedeeld door de samenleving en de stakeholders. Deze waarden worden vertaald in regelgeving of beleid. Op het derde niveau kunnen individuele stakeholders hun interpretatie van hun waardes realiseren, zolang deze niet in conflict komen met de waarden van het eerste niveau.

Summary

From 1997 to 2003 Europe faced three major animal disease epidemics: classical swine fever, foot and mouth disease and avian influenza. In these epidemics millions of animals were culled. In the early nineties the European Union adopted a non-vaccination strategy to control these highly contagious diseases. Stamping out a disease, which means culling infected and healthy animals within a radius of 1-3 kilometres from the source of the infection, was from a financial-economic perspective, preferable to vaccination. It stopped the disease infecting other animals, and enabled the member states to quickly regain their 'disease-free' status. The latter was imperative to resume international trade in animals and animal products. The rationale behind the stamping-out policy was a weighing of economic pros and cons with respect to this international trade. In the Netherlands and the United Kingdom, the stamping-out strategy was resisted. This resistance not only came from the animal keepers, but also from the general public who had been confronted with footage of burning pyres (in the United Kingdom), animal welfare problems and the frustration and anger of those directly involved.

At present new prevention and control strategies for contagious animal diseases are being developed which aim to better reflect the views in society about justifiable culling of animals during an epidemic. This is necessary to avoid further conflict between the animal keepers, the government and society as a whole in the case of future outbreaks of diseases. For this purpose, policymakers should be knowledgeable of the moral convictions about animals in Dutch society, and whether different forms of animal keeping each have different convictions which are caused by the nature of the animal keeping. For instance the nature of animal keeping can be commercial or non- commercial, in that animals can be kept for food production, company, breeding or sports.

The aim of the research was to identify and describe the diversity of moral convictions about animals in Dutch society and among livestock farmers and veterinarians in the Netherlands. These two animal practices were directly involved in the epidemics and work with animals on a daily basis. Furthermore, the aim was to describe the role of convictions in judgement on the culling of healthy animals during an animal disease epidemic. The results may contribute to a better understanding of moral convictions, which is important knowledge in the development of new prevention and control strategies for contagious animal diseases.

First a pilot study was performed in 25 European member states, and among Dutch backyard animal keepers. The aim of the European survey was to gain more insight

into the social-ethical issues that resulted from the European non-vaccination policy, and to learn about views on the preferred future policy. Backyard animal keepers were chosen because they were a group of animal keepers that had emerged in the Dutch countryside. They keep their animals on a non-commercial basis for company or for breeding. Since at the time no distinction was made between production and backyard animals, the latter were culled as well. The aim of the pilot study was to learn more about this practice, the human-animal relationships and the moral values that were at stake in the control of the epidemics.

In the European survey a selection of stakeholders, such as the government (the chief veterinary officers), livestock farmers and veterinarians from each member state was asked to prioritise issues for the prevention and control of animal diseases. There were no differences between member states with or without a history of recent epidemics. A majority of stakeholders in the North-western and Southern member states considered preventive measures the priority issue. The Eastern European member states considered the social-psychological and financial issues the most important. The Netherlands chose animal welfare and ethical issues as the first priority.

The backyard animal study consisted of a qualitative part, which included interviews with 24 representatives of this practice and a survey among 214 respondents. In contrast to the livestock practice, backyard animals are kept and valued for their company, their value as a rare, Old-Dutch or special breed, their visibility in the countryside, or the contribution of certain breeds to the biodiversity, to a region with cultural-historical value or in a nature reserve. Backyard animals thus have a status which is separate from that of production animals and closer to that of companion animals. Furthermore, the moral vocabulary was studied as used by the keepers who had experienced the epidemics to describe their moral objections to the culling.

These surveys and the literature study yielded relevant results for the design of a model to empirically identify and describe moral convictions and judgement in Dutch society. The model consisted of two parts. In part one, moral convictions were identified and described. In part two, in the form of a case-study, the role of these moral convictions in the justification of culling healthy animals was studied.
Part one of the model was constructed of domains, statements and criteria. The domains were: the hierarchical position of animals with respect to people, the value (as in appreciation) of animals, doing good to animals (to care for and to protect against harm), and animals' right to life. Each domain included a number of statements which reflected a conviction about the domain. Each statement was supported by a number of criteria. The criteria clarified what the conviction was

based on. A moral conviction was defined as one statement combined with one or a number of criteria. With this method, convictions and their diversity are described.
For domain one, the three statements were: humans are superior to animals, humans and animals are equal, and animals are superior to humans. For domain two, the two statements were: animals have value, and animals have no value. For domain three, the three statements were: doing good to all animals, doing good to some animals and no duty to do good to animals. For domain four, the three statements were: all animals have a right to life, some animals have a right to life, and animals have no right to life.
The criteria were derived from academic animal ethics theories about the moral importance of animals. Some criteria referred to intrinsic characteristics of the animal, such as life, sentience (to be able to feel pain an emotions) and rationality. Other criteria referred to the functional use of animals for humans and the ecosystem, and the relational human-animal bond. One criterion referred to religion or a philosophy of life, and one criterion referred to virtuous character: people who do good to animals become better people. With this framework, a conviction is the combination of a statement combined with one or more criteria, for instance: all animals have a right to life, because animals are living beings.

The second part of the model, the case-study, was constructed using four cases, three judgement categories and a number of arguments. Each case presented an argument in favour of culling and arguments against culling.
The arguments in favour were: healthy animals should be culled to stop a disease from spreading (case one), to safeguard the export position of a country (case two), to protect people against eye infections (case three) and to protect human life (case four).
The arguments against culling were: healthy animals (cows and chickens were chosen) should not be culled, because: animal life is valuable / cows are highly developed (mental capacity to think, feel, and be conscious) / chickens are highly developed (idem) / special and rare breeds are valuable (important for a species, a region or the ecosystem) / animals have a financial value to people (for instance production animals as a source of income for the farmer) / people have a personal bond with these animals (relational bond) / killing animals is a bad character trait (virtue) / animals are part of Creation (religion). These arguments were the same in all four cases. This was done to study whether an argument was rated differently according to the case.
Each of the arguments against culling was a 'translation' of a criterion. In this way the criterion became an argument against culling.

In the form of a questionnaire, the model was used in two Internet surveys. Per domain, respondents were asked to choose only one statement which best reflected

their conviction about the domain. Then they rated all criteria that referred to this statement with a rate between 0 and 10, with 0 not important at all for the statement and 10 very important for the statement.
In the case-study, the respondents gave their judgement on the culling per case. They could choose between: I agree, I partly (dis)agree or I disagree with the culling. They motivated their judgement by rating the argument in favour of and against culling by a number between 0 and 10.

The national survey was performed among 1999 respondents who were representative of the Dutch-speaking population. The results showed a diversity of convictions. The conviction *humans are superior to animals* was chosen by 67% of the respondents. The conviction *animals have value* was chosen by all the respondents, the conviction *people should do good to all animals* was chosen by 85%, and the conviction *all animals have a right to life* was chosen by 87% of the respondents.
Two groups were identified: group A (50% of the respondents) and B (28%). Compared to the B respondents, more A respondents were male, were older and lived in smaller communities. The A respondents considered humans to be superior to animals. The B respondents considered humans and animals to be equal. These two groups, together 78% of the respondents, shared a number of other convictions: i.e., animals have value, people have a duty to care for and protect all animals, and all animals have a right to life. These convictions were based on a number of criteria, such as animals as living beings, the ability of animals to feel pain and emotions (sentience), and the importance of animals for the ecosystem. The A group rated the criteria (significantly) lower that the B group.

The case-study showed that convictions played a role in judgement because it was possible to distinguish between the A and B group on the basis of judgement and the rating of the arguments. Fifty percent of the respondents from the A and B group partly agreed/partly disagreed with culling healthy animals to protect a country's export position (A: 50%, B: 50%) or to prevent eye infections caused by the disease in people who had been in direct contact with infected animals (A: 41%, B: 45%). Most respondents (A: 81%, B 61%) agreed with culling to protect human life. Most A respondents (53%) agreed with culling to stop the disease from spreading (B: 29%). The argument against culling: *healthy animals should not be culled because animal life is valuable* was rated the highest by both groups. The A respondents rated all arguments against culling (significantly) lower and arguments in favour higher than the B respondents.

A second survey was conducted among 863 veterinarians and 762 livestock farmers in the Netherlands.

With respect to their convictions, the similarities with the national survey and between the veterinarians and the farmers were found in the choice of statements and criteria. The differences were found in the percentage of respondents per statement and in the rating of the criteria.
With respect to judgement, the difference with the national survey and between the veterinarians and the farmers was that the majority of the veterinarians and farmers either disagreed or partly agreed/partly disagreed with culling healthy animals to stop an animal disease from spreading and thus infecting other animals, to safeguard a country's export position, or to prevent eye infections in people. Culling to protect human life was agreed on by most. As in the national survey, the argument against culling: *healthy animals should not be culled because animal life is valuable* was rated the highest by both groups.
It is argued that a person who values the criterion *animal life* highly for his or her convictions, will value animal life highly as an argument against culling. Arguments in favour of culling must be valued higher than the value of animal life for a person to agree with culling.

It is concluded that a number of convictions and criteria are shared by a majority in Dutch society, upon which animals' moral importance and society's moral responsibilities to animals are based.

In a next step the results are discussed with respect to their relevance for future prevention and control policy.
The current European animal disease policy finds its justification in a 'harm-to-others' principle. Limiting the freedom of animal keepers by culling their animals is justified to prevent harm caused by a spreading of the disease, jeopardising a country's export position. However, both in the prevention of notifiable animal diseases and during the control of outbreaks, the government is confronted with conflicting claims of stakeholders who anticipate running a *risk* to be harmed by each other, and who ask for government intervention. Therefore the harm principle is no longer a sufficient justification for governmental intervention. It is argued that policy should shift from limiting 'harm' to weighing conflicting claims with respect to 'risks of harm'. A policy that addresses conflicting claims of risks-of-harm needs to take into account additional value assumptions.

A three-layered concept for moral convictions and normative policy is proposed and discussed.
The first layer of moral convictions includes values that are not only important for an individual, but are shared in society as a whole and therefore are part of the public morality. They are based on intrinsic, relational, functional, religious or other criteria. The second layer includes values that are specific for an individual or

groups. The third layer consists of values that are relevant in a public debate about a certain animal issue, and as such have become arguments in this debate. The third layer does not contain the same set of values all the time. In a different debate, other values may migrate to the third layer.
An open normative policy approach connects three-layered convictions and normative policy. With this concept one can express values, freedoms and responsibilities of all stakeholders at three levels in policy.
The first level reflects the minimum norms of animal keeping following from the shared convictions in society, and therefore should be laid down in legislation. It sets the minimum norm for animal health and welfare and should refer to individual animals as well as animal species in the ecosystem. At this level risk-of-harm is understood from the animals' point of view, as human action can be a risk to the animal.
The second level includes additional norms set down in regulations, to meet further demands by society and stakeholders. At this level, consensus can be reached between stakeholders and between stakeholders and society, to equally distribute risk-of-harm, values, responsibilities and freedom of each stakeholder. At this level risk-of-harm is understood from the stakeholders' point of view.
At the third level, individual stakeholders can realise their interpretation of their values. Freedom of action is realised at this level, allowing animal keepers freedom to keep animals in a way they see fit, as long as this does not present a risk-of-harm at the first or second level.

It is concluded that in Dutch society there is diversity in moral convictions, some of which are shared by the majority. Most people consider humans to be superior to animals. The second largest group of people consider humans and animals equal. Most people find that animals have value, that people should care for and protect all animals, and that all animals have a right to life. These convictions are based on a number of criteria, such as life, sentience, and the ecosystem.

It is concluded that moral convictions play a role in judgement. Differences between people with differing moral convictions are reflected in differences in judgement and valuation of arguments against and in favour of culling healthy animals.

Training and Supervision Plan

Nina Eva Cohen

Basic Package		
WIAS Introduction Course	2005	1.5
Course on philosophy of science and/or ethics	2005	1.5
International conferences		
Conference Avian Influenza Ede	2006	0.3
European Society for Agriculture and Food Ethics (Eursafe) Vienna	2007	0.3
World Congress Alternatives and Animal Use in the Life Sciences	1996-02	4.5
Symposium Harlan Dusseldorf	1996	0.3
Seminars and workshops		
WIAS Science Day 5x	2005-9	1.5
NVDEC Nascholingsdag DEC leden Rijswijk	2005	0.3
Diergezondheid: ratio of emotie? The Hague	2007	0.2
NWO Masterclass Birnbacher Amsterdam	2008	0,6
NWO Studiedag Ethiek Onderzoek en Bestuur The Hague	2006-08	0.4
Het Doden van Dieren: Maatschappelijke en Ethische Aspecten, Utrecht	2002	0.3
Presentations		
Oral presentation Eursafe Vienna	2007	1.0
Oral presentation workshop Moral convictions about animals The Hague	2009	1.0
Oral presentation Koninklijke Maatschappij voor Diergeneeskunde Houten	2008	1.0
Oral presentation WIAS Science Day	2009	1.0
Oral presentation NWO masterclass Birnbacher Amsterdam	2008	1.0
Oral presentation NWO Ethiek Onderzoek en Bestuur Den Haag	2008	1.0
Poster presentation WIAS Science Day	2008	1.0
Oral presentation Harlan Dusseldorf	1996	1.0
Disciplinary and interdisciplinary courses		
PhD course tailor made Animal and Nature Ethics Utrecht University	2005	4,0
MSc Course Animal and Nature Ethics Utrecht University	2005	3.5
MSc Course Law, Morality and Policy Utrecht University	2006	7.5
Professional Skills Support Courses		
Focus op onderwijskundig en didactisch handelen Universiteit Utrecht	2001	0.6
(WGS Technique for writing and presenting a scientific paper	2009	1.2
WGS Course Science, the press and the general public Wageningen	2009	1,0
WGS Inter- and Transdisciplinary Research: Intervision and Com. Skills	2009	1.1
Research Skills Training		
New foundations for the prevention and control of notifiable animal diseases	2004	0.8
Didactic Skills Training		
Article 9 course LUMC and Leiden University	2004-09	3.0
BSc ARUC	2008-09	0.4
PhD Course Ethics and Philosophy of Animal Science	2008-09	0.4
Supervising theses two MSc-students	2005-07	4,0
Management Skills Training		
Organisation Local Ethical Matrix Workshop Wageningen	2008	1.5
New foundations for the prevention and control of notifiable animal diseases	2009	1.5
Membership of boards and committees		
Animal Ethics Committee Leiden University and LUMC	2004-10	16.0
Werkgroep Primaten	2004-09	1.5
Werkgroep Dialoog	2004-09	1.5
Total		**69.2**

Curriculum vitae Nina Eva Cohen

2004-2009 Wageningen Universiteit Leerstoel Dier en Samenleving
Bij de Wageningen Universiteit deed Nina promotieonderzoek bij de leerstoelgroep Dier en Samenleving onder leiding van Prof.dr. Elsbeth Stassen. Het betrof een NWO project *New foundations for the prevention and control of notifiable animal diseases*. De resultaten staan beschreven in dit proefschrift

1994-2004 Universiteit Leiden en Universiteit Utrecht Leerstoel Dierproefvraagstukken
In deze periode heeft Nina gewerkt bij de leerstoelgroep Dierproefvraagstukken, onder leiding van Prof.dr. Tjard de Cock Buning. Deze afdeling was tot 1999 ondergebracht bij de Universiteit Leiden en daarna bij de Universiteit Utrecht. Nina hield zich als onderzoeker bezig met ethische en maatschappelijke vraagstukken rond dierproeven en proefdieren. Zij heeft diverse projecten uitgevoerd, zoals een haalbaarheidsstudie naar een instituut Society and Genomics, inventarisatie van Animal Ethics Committees in de Europese lidstaten, analyse van beslismomenten van de Commissie Biotechnologie bij Dieren, de toekomst van het primatenonderzoek in Nederland, gezondheid en welzijn van transgene dieren, elders betrokken transgene organismen, en humaan materiaal als alternatief voor dierproeven.

1989-1992 Wetenschapswinkel Universiteit van Amsterdam
Wetenschapswinkels hebben tot doel om wetenschappelijke kennis beschikbaar te stellen voor maatschappelijke organisaties. Nina werkte als onderzoeker en projectbegeleider. Ze deed onderzoek naar de effecten van voedseldoorstraling op de gezondheid, en de afschotproblematiek van knobbelzwanen.

Publications

Scientific publications

NE Cohen MAPM van Asseldonk EN Stassen 2007 Social-ethical issues concerning the control strategy of animal diseases in the European Union: A survey. Agriculture and Human Values 24(4) 499-510

NE Cohen, FWA Brom EN Stassen, Keeping backyard animals in the Netherlands. A study into to the nature of the practice, its specific human-animal bond and views on the culling of healthy animals during an animal disease epidemic. Submitted to Society & Animals.

NE Cohen FWA Brom EN Stassen 2009 Fundamental moral attitudes to animals and their role in judgement. An empirical model to describe fundamental moral attitudes to animals and their role in judgement on the culling of healthy animals during an animal disease epidemic, Journal of Agricultural and Environmental Ethics 22, 341-359

NE Cohen FWA Brom EN Stassen Diversity of convictions concerning animals in Dutch society, and judgment on the culling of healthy animals in animal disease epidemics. A survey. Submitted to Anthrozoös.

NE Cohen FWA Brom EN Stassen Moral convictions concerning animals and the culling of healthy animals in animal disease epidemics. An empirical survey among farmers and veterinarians. Submitted to Animal Welfare.

FLB Meijboom NE Cohen E Stassen FWA Brom 2009 Beyond the prevention of harm: animal disease policy as a moral question. Journal of Agricultural and Environmental Ethics, 22, 6, 341-359.

Proceedings

NE Cohen FWA Brom EN Stassen 2007 Keeping backyard animals as a way of life. In: W Zollitsch WC Winckler S Waiblinger A Haslberger (eds) Sustainable Food Production and Ethics, Preprints of the 7th Congress of the European Society for Agriculture and Food Ethics, Eursafe 2007, September 13-15, Vienna, Wageningen Academic Publishers, The Netherlands.

FLB Meijboom NE Cohen FWA Brom 2007 Animal disease policy as a moral question with respect to risks of harm. In: W Zollitsch C Winckler S Waiblinger A Haslberger (eds), Sustainable Food Production and Ethics, Preprints of the 7th Congress of the European Society for Agriculture and Food Ethics, Eursafe 2007, September 13-15, Vienna, Wageningen Academic Publishers, The Netherlands.

Other publications

F Stafleu NE Cohen 2004 Animal Welfare Committees in Europe, Universiteit Utrecht, Ethiek Instituut.

NE Cohen AAH Hazekamp, Tj de Cock Buning 2003 Gezondheid en welzijn van transgene dieren, Ministerie van LNV, Den Haag.

NE Cohen Tj de Cock Buning 2003 Buying or making, what's it to be? The choice between acquiring or generating genetically modified animals or embryos in the light of the Three Rs, ATLA.

LE Paula NE Cohen 2003 Het doden van gezelschapsdieren en recreatiedieren. In: Het doden van dieren. Maatschappelijke en ethische aspecten. Proceedings of the symposium "Het doden van dieren", 18 June 2002, Utrecht, the Netherlands, p105-107

NE Cohen Tj de Cock Buning 2002 Elders betrokken genetisch gemodificeerde dieren, Proefdier en Wetenschap 13, Universiteit Utrecht, Dierproefvraagstukken.

NE Cohen AAH Hazekamp Tj de Cock Buning 2000 Judging transgenic projects, what should be known? Progress in the reduction, refinement and replacement of animal experimentation. eds. M Balls A.-M. van Zeller M.E. Halder, Elsevier Science.

NE Cohen M. Dol R van der Bos 2000 Gemeentelijk dierenwelzijnsbeleid en landelijk dierenwelzijnsbeleid, raakvlakken en kansen, maart 2000 Amsterdam.

NE Cohen AAH Hazekamp Tj de Cock Buning 1999 Judging transgenic projects, what should be known? ATLA 27, p. 182.

NE Cohen M Dol R van der Bos 1997 Welzijn van dieren en dierenwelzijnsbeleid, essays over doelstellingen, instrumenten en evaluatie van het dierenwelzijnsbeleid in Nederland, Tilburg University Press.

NE Cohen 1996 Humaan materiaal in onderzoek, voorstel tot alternatieven voor dierproeven, Universiteit Leiden, Dierproefvraagstukken, Leiden,

NE Cohen 1992 De knobbelzwaan in Nederland, schade en afschot, Wetenschapswinkel, Universiteit van Amsterdam.

Cohen NE, 1990 Voedseldoorstraling, Wetenschapswinkel, Universiteit van Amsterdam

Dankwoord

Promotieonderzoek doe je niet alleen en ik ben veel mensen dankbaar die mij op allerlei manieren geholpen hebben.
Ten eerste mijn promotoren Elsbeth, Frans en Arjan. Elsbeth is een kei. Ze was er altijd voor me in moeilijke tijden, terwijl zij het zelf ook niet altijd gemakkelijk had. Ik heb heel veel van haar geleerd over het opzetten van onderzoek, de analyse van de resultaten en het schrijven van wetenschappelijke artikelen. Ze spaarde mij daarbij niet (ze vond dat ik 'draken van zinnen' maakte en riep regelmatig uit 'Wat is *dit* nou weer?', terwijl ik steenvast riep: 'Ja maar, dat STAAT er toch?).
Frans bewonder ik omdat hij op een hoog abstractieniveau denkt. Hij gebruikte vaak de term 'helder' in de zin van: duidelijk voor ogen hebben wat ik wil met mijn onderzoek en wat mijn bijdrage is aan de wetenschappelijke discussie over dit onderwerp (vaak vroeg ik me hetzelfde af). Trouwens iemand die van Amsterdam, klassieke muziek en wijn houdt kan bij mij niet stuk.
Bij Arjan konden we altijd terecht aan zijn grote tafel om de voortgang van het onderzoek te bespreken, gezeten naast een grote vitrine met tientallen kippenbeeldjes. Hij had de kennis over de epidemiologie van dierziektes, die ik zo hard nodig had. Hoewel hij niet mijn dagelijkse promotor was stond hij altijd klaar met advies, en zijn rustige uitstraling maakte mij ook rustig.
Naast mijn promotoren was mijn collega Fokje de belangrijkste steun en vraagbaak en met haar heb ik heel veel gezellige uren doorgebracht. Natúúrlijk hadden we het over mijn onderzoek, maar ook vaak over worteltaart, Sinterklaas, vlees eten: ja/nee/geen mening, keukens, vakantie, fotografie, zingen, zielige beestjes, verliefdheden, kinderen en kleren. Maar vooral heeft Fokje mij enorm geholpen met de statistische analyse van mijn resultaten. Zij liet mij zien dat statistiek niet eng is (nou ja een beetje dan). Ik stam nog uit de tijd van de rekenliniaal dus van SPSS had ik nog nooit gehoord. Ik dacht dat het een nieuwe omroep was.
Niet alleen bij de statistiek maar ook bij de lay-out van mijn proefschrift heeft zij mij enorm bijgestaan. Liever gezegd, Fokje deed de lay-out en ik zat ernaast voor de mentale steun.
Ook mijn andere collega's Simon, Leo, en Bart waren altijd bereid om mij te hulp te bieden of advies te geven. Hartelijk dank!
Met Iteke heb ik de vragenlijst die in de surveys werd gebruikt opgesteld. Iedereen die denkt dat vragenlijsten maken eenvoudig is, heeft het fout. Inderdaad: pas als je *helder* voor ogen hebt wat je precies wilt weten, kan je de juiste vragen formuleren, en dat kan wel even duren. Het was na een gesprek met Franck, de eerste auteur van een van de artikelen, dat ik de eerste ideeën kreeg voor het theoretisch kader van de vragenlijst.
Als onderzoeker moet je niet alleen onderzoek doen, maar moet je ook kunnen schrijven en wel in het Engels. Omdat het schrijven van wetenschappelijke artikelen

in het Engels iets heel anders is dan het bestellen van een pint of Guinness, heb ik de hulp gevraagd van mijn slimme en trouwe vriendin Sue. Zij heeft bijna alle manuscripten nauwkeurig gelezen en het Engels gecorrigeerd. Dit was een enorm karwei en ik ben haar daarvoor heel dankbaar. Soms als Sue geen tijd of gelegenheid had, kon ik terecht bij mijn andere Engelse vrienden Johan, Jane en Mike.
De prachtige afbeeldingen die op de omslag staan en de hoofdstukken inleiden zijn gemaakt door mijn lieve vriend en kunstschilder Andrew en prachtig gefotografeerd door Gerda. Andrew heeft zich laten inspireren door de prehistorische grottekeningen in Frankrijk en Zuid-Afrika. Deze grottekeningen laten zien dat dieren al heel lang een belangrijk onderdeel uitmaken van de mensengemeenschap.
Fokje en Daniel, mijn broer, heb ik gevraagd om mijn paranimfen te worden. Fokje als mijn vriendin en collega en Daniel als een van de fundamenten van mijn leven.
Last but *absoluut niet* least mijn vriendin en zangbuddy Irene: zij kan niet alleen goed zingen en acteren, zij kan ook heel goed organiseren, en dat is wel handig als je de ceremoniemeester bent. Haar moeder Riet heeft weer andere talenten en heeft de sjaals en cummerband gemaakt voor de paranimfen, de ceremoniemeester en voor mij. Mocht het niks worden met de openbare verdediging, dan zien we er in ieder geval goed uit.

APPENDIX 1 QUESTIONNAIRE

DOMAIN ONE POSITION

Statements and criteria		Rating 0-10	Category
Humans are superior to animals, because:	Animals feel less pain and emotions		Intrinsic
	Animals cannot think		
	Animals cannot distinguish between right and wrong		
	Humans are more important in the ecosystem		Functional
	Open answer		
Humans and animals are equal, because:	Animals are living creatures as well		Intrinsic
	Animals feel pain and emotions as well		
	Animals can think as well		
	Animals can distinguish between right and wrong as well		
	Animals and humans are equally important in the ecosystem		Functional
	Open answer		
Animals are superior to humans, because:	Animals can experience more feelings of pain and emotions		Intrinsic
	Animals have a higher ability to think		
	Animals can better distinguish between right and wrong		
	Animals are more important in the ecosystem		Functional
	Open answer		

DOMAIN TWO VALUE

Statements and criteria		Rating 0-10	Category
Animals have value, because	Animals are useful to people		Functional
	Animals are important in the ecosystem		
	Animals are living beings		Intrinsic
	Animals have a personal relationship with people		Relational
	Open answer		
Animals have no value	Open answer		

DOMAIN THREE TO DO GOOD

Statements and criteria		Rating 0-10	Category
People have a responsibility to do good to all animals, because:	Animals are living creatures		Intrinsic
	Animals can feel pain and emotions		
	Animals can think		
	Animals are important in the ecosystem		Functional
	It makes people better people		Virtue
	Open answer		
People have a responsibility to do good to some animals, namely:	Animals that can feel pain and emotions		Intrinsic
	Animals that can think		
	Animals that are important in the ecosystem		Functional
	Animals with an economic value to people		Functional:
	Animals with an emotional value to people		Relational
	Open answer		
People have no responsibility to do good to animals, because:	Animals feel insufficient pain and emotions		Intrinsic
	Animals are insufficiently capable of thought		
	Animals are not important in the ecosystem		Functional
	Open answer		

DOMAIN FOUR RIGHT TO LIFE

Statements and criteria		Rating 0-10	Category
All animals have a right to life, because:	Animals need to fulfil their natural life-cycle		Intrinsic
	Animal life is valuable		
	Animals can feel emotions		
	Animals can think		
	Animals have an urge to live		
	Animals are important in the ecosystem		Functional
	Open answer		
Some animals have a right to life, namely:	Animals that are capable of feeling		Intrinsic
	Animals that can think		
	Animals that know the difference between life and death		
	Animals that have an economic use for humans		Functional
	Animals humans have a relationship with		Relational
	Animals that are important in the ecosystem		Functional
	Open answer		
Animals have no right to life, because:	Animals have insufficient feelings		Intrinsic
	Animals are insufficiently capable of thought		
	Animals do not know the difference between life and death		
	Animals have no urge to live		
	Animals are not important in the ecosystem		Functional
	Open answer		

Schematic representation of the four cases

During an animal disease epidemic, healthy cows and chickens are culled in the stamping-out strategy to eradicate the disease.
Do you agree with the culling of these healthy animals, when they are culled:
- Case 1: to stop the disease from infecting other animals
- Case 2: to safeguard the export position of a country
- Case 3: to protect human health (eye infections)
- Case 4: to protect human life

I disagree / I partly (dis)agree / I agree with the culling of these healthy animals for this purpose, because

Arguments in favour of culling		Rating 0-10
Culling is necessary to stop infecting other animals / to safeguard the export position / to protect human health / to protect human life		

Arguments against the culling	based on value	Rating 0-10
An animal's life is valuable; therefore these cows and chickens should not be culled	Life	
Chickens are highly developed animals; therefore these animals should not be culled	Mental capacity*	
Cows are highly developed animals; therefore these animals should not be culled	Mental capacity	
Cows and chickens that are of a special or rare breed should not be culled	Functional value for a species, region or the biodiversity	
Cows and chickens that have a financial value to people should not be culled	Utility for people	
Cows and chickens that have an relational value to people should not be culled	Relational value for people	
Culling healthy cows and chickens is a bad character trait; therefore these animals should not be culled	Virtue	
Cows and chickens are part of Creation, and therefore should not be culled	Religion	

*****R*efers to a degree of development of the animal to think, reflect and draw conclusions about oneself or others*

Colophon

Design of the cover and title pages of the chapters
Andrew T.I. Watson

Photography
Gerda van Twillert-Cohen

Text lay-out
Fokje Steenstra

This PhD project is financed by the NWO theme program Ethics, Research and Public Policy and by the chair Animals & Society

NWO Ethiek, Onderzoek & Bestuur