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ARTICLES

Fundamental Moral Attitudes to Animals and Their Role in Judgment: An Empirical Model to Describe Fundamental Moral Attitudes to Animals and Their Role in Judgment on the Culling of Healthy Animals During an Animal Disease Epidemic

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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 judgment 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.

Keywords Animal disease epidemics · Philosophical animal ethics · Fundamental moral attitudes to animals · Value of an animal's life · Judgment on animal issues

Introduction

From 1997 to 2003 three major animal disease epidemics: classical swine fever, foot and mouth disease, and avian influenza swept over Europe, leaving behind millions of infected

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and healthy animals culled and numerous animal keepers traumatized. What had happened? In the early 1990s 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 km from the source of the infection, was from a financial-economic perspective, preferable to vaccination (Mephram 2004; Woods 2004; Koninklijke Nederlandse Academie 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. The financial setback for the individual animal keepers was outweighed by the benefit to the trade position of a country as a whole. Furthermore, 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 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; Mephram 2001, 2004; Crispin et al. 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; The Netherlands: Huirne et al. 2002; Haafte et al. 2002; Raad voor het Landelijk Gebied and Raad voor Dierenangelegenheden 2003, 2004; Nederlandse Vereniging tot Bescherming van Dieren 2004; van der 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 (Staffeu 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 der Berg 2002; Nederlandse Vereniging tot Bescherming van Dieren 2004; Van Velzen and Dekker 2003; van der 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 (Cohen et al. 2007).

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. *in press*). This justified the decision to take control of the private domain of the animal keepers, rendering them powerless to stop the slaughtermen 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 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 exist 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 attitudes (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 1997; 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; Mephram 2001, 2004; Murphy-Lawless 2004, for the Netherlands: van der Berg 2002; Haaften et al. 2002; Huirne et al. 2002; Raad voor het Landelijk Gebied and Raad voor Dierenaangelegenheden 2003, 2004; Noordhuizen-Stassen et al. 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 *arguments* (= 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 (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 et al. 2005).

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. 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 that can feel pain and emotions have a conscious desire not to be harmed. 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 fulfill 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 fundamentals 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 fulfill 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 behavioral 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 in 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 fulfill 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 behavior is gaining ground. This was also described by DeGrazia (1999) in his article on current developments in animal ethics theory in the twenty-first 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 behavior, or the "right" action, in a specific situation? Hursthouse suggests that a person's behavior 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 favor 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 can be valued with a number between 0 and 10. For judgment, the arguments in favor and those against are 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

Table 1 Schematic representation of FMA

Elements	1 Hierarchy		2 Value		3 To do good		4 Rights (here: right to life)				
	3 dimensions		2 dimensions		3 dimensions		3 dimensions				
	1 Humans are superior to animals	2 Humans and animals are equal	3 Animals are superior to humans	1 Animals have value	2 Animals have no value	1 Obligation to all animals	2 Obligation to some animals	3 No obligation to animals	1 All animals have a right to life	2 Some animals have a right to life	3 Animals have no right to life
Categories	Arguments reflecting animal ethics criteria										
Intrinsic	1 Life	x		x		x		x			
	2 Sentience	x			x		x		x		x
	3 Rationality, consciousness	x		x		x		x		x	x
	4 Moral agency	x									
	5 Life-cycle of animal										x
Functional/Instrumental	6 Animal's urge or will to live										x
	7 Animal's future										x
	8 Function of an animal (species) in the ecosystem	x		x		x		x		x	x
	9 Instrumental utility to people				x		x				x

Table 1 Schematic representation of FMA

Elements	1 Hierarchy 3 dimensions	2 Value 2 dimensions	3 To do good 3 dimensions	4 Rights (here: right to life) 3 dimensions
Relational	1 Humans are superior to animals 2 Humans and animals are equal 3 Animals are superior to humans	1 Animals have value 2 Animals have no value	1 Obligation to be good to all animals 2 Obligation to be good to some animals 3 No obligation to animals	1 All animals have a right to life 2 Some animals have a right to life 3 Animals have no right to life
Virtue	10 Relational human-animal bond 11 To become a better person by being good to animals	x	x	x

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

Table 2 Schematic representation of the four cases

<p>Case: During an animal disease epidemic, healthy chickens and cows 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 (veterinary reason) Case 2: to safeguard the export position of a country (financial-economic reason) Case 3: to protect human health (eye infections) Case 4: to protect human life I disagree/partly agree, partly disagree/agree with the culling of these healthy animals for this purpose, because:</p>	<p>Valuation between 0 and 10</p>
<p>Arguments</p> <p>Arguments in favor of culling: Culling is necessary to stop infecting other animals/to safeguard the export position/to protect human health/to protect human life</p> <p>Arguments against the culling reflecting FMA convictions in their practical form: An animal's life is valuable; therefore these animals should not be culled Chickens are highly developed animals; therefore these animals should not be culled Cows are highly developed animals; therefore these animals should not be culled Animals that are of a special or rare breed should not be culled Animals that have a financial value to people should not be culled Animals that have an emotional value to people should not be culled Killing healthy animals is a bad character trait; therefore these animals should not be culled</p>	<p>Based on the theoretical FMA conviction that animals have a right to life based on: Life Rationality and consciousness* Rationality and consciousness* Functional value for a species or for biodiversity Instrumental value for people Relational value for people Virtue</p>
<p>Rationality and consciousness are combined into 'highly developed' to avoid confusion about these terms and because both refer to a degree of development of the animal to think, reflect and draw conclusions about oneself or others</p>	

example: for element 3 (to do good) an opinion that we should do good to animals (dimension 2), that people have a relational bond with (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 ($3 \times 2 \times 3 \times 3$), 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 2 gives the four cases about the culling of healthy animals. In each case, arguments against the culling are weighed against arguments in favor of culling. For judgment the choice is disagree/partly disagree, partly agree/agree with the culling of healthy animals for this case. The arguments can be numerically valued with a number between 0 and 10.

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 behavior 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 et al. [in press](#)). 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 an 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.

Conclusion

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 attitudes (FMAs) to 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.

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