The Concepts of Health, Well-being and Welfare as Applied to Animals

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A Philosophical Analysis of the Concepts with Regard to the Differences Between Animals.

Henrik Lerner

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1. Introduction

When one wants to describe how a certain animal is doing in life one can use certain concepts. Examples of this are sentences such as "this animal has good health" or "this animal has no welfare". Several terms could be used but the three central ones are "health", "well-being" and "welfare". All these three terms are used in studies of animals as well as in protection of animals through legislation. These terms could refer to various circumstances, states or abilities. Within the science of animal health and welfare (see Terms for the research field, below) there seems to be both a consensus-view (Anonymous 2001) as well as a striving for new or better references for these concepts. This is not surprising.

To give a definition of an important abstract concept is not an easy task. "It is extremely difficult to give a definition of health" states K. W. Aspinall in his *First Steps in Veterinary Science* (Aspinall 1976). This holds true also for well-being and welfare. Various attempts have been made by animal researchers, ethologists and veterinary surgeons since the 1960s to define these concepts without reaching consensus. This is not unique compared to other areas. The same is true when one looks at the conceptualisation attempts of philosophers, sociologists and other scholars when it comes to research on human beings. During the same period the definition of health for humans has also been vigorously discussed.

Do we need to define the concepts of health, well-being and welfare when they are so difficult to define? The most striking reason for doing so is that much of the research and legislation concerning animals is based on these concepts. As J. Tannenbaum (1991) points out, the definition of a concept is crucial because the definition chosen will affect what research the researcher chooses to do. If the researcher uses the concept of welfare, that concept needs to be defined or at least demarcated so that other researchers know what the researcher is actually talking about. Also, if the concept of health is used in legislation, there has to be a definition so that legislators or interpreters of the law know where to put their emphasis.

As Colin Spedding wrote:

... there is nothing to be gained by simply bendying about our opinions of animal welfare, each of us using 'welfare' to mean

whatever suits our purposes. There has to be an agreed definition of welfare ..., and what represents good welfare has to be spelt out in great detail, for every kind of animal in terms of sex, age and weight, for example, and for a range of situations such as whether the animal has to be housed or kept out-of-doors. (Spedding 2000, p. 69)

Background of the thesis

This thesis is a fruit of the crossdisciplinary research project *On health and welfare in the world of animals and humans: a comparative study.*¹ The project has been a collaboration between Tema Health and Society,² Linköping University, Linköping, Sweden, and the Department for Animal Environment and Health, Swedish University of Agricultural Sciences, Skara, Sweden, and the research group will henceforth in this thesis be called *the crossdisciplinary research group on health and welfare*. The aim of the project has been twofold:

(1) to scrutinise and compare selected parts of the scientific, ethical and programmatic discussion of the concepts of health, quality of life and welfare, from the two last decades, within both the human health care sector and the veterinary sector

and.

(2) to design, on the basis of this comparative scrutiny, proposals for the reconstruction of the relevant concepts so that the two branches of science and care can be supported.

Interestingly, few theoretical comparisons on this topic have been made between the human sector and the animal sector prior to this project (see, for useful comparisons, Rollin 1983; Sandøe 1996; Appleby and Sandøe 2002). Besides this thesis other writings have been published within the framework of the project. Lennart Nordenfelt's *Animal and Human Health and Welfare – a Comparative Analysis* (Nordenfelt 2006) analyses if holistic theories of health in the human sector could be applicable to and be fruitful for the animal sector. Stefan Gunnarsson analyses in a research paper the concept of health in textbooks within veterinary medicine (Gunnarsson 2006). Finally, a Swedish anthology with contributions from the different members of the crossdisciplinary research group on health and welfare has been published (Algers et al. 2008). In that anthology topics covered are definitions of the concepts in human and veterinary medicine, ethical problems and similarities between animals and humans, definitions of health among veterinary surgeons and doctors, to name but a few topics.

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² Nowadays: Division of Health and Society, Department of Medical and Health Sciences.

Terms for the research field

With regard to animals, the discussion about the concepts of health, well-being and welfare has been pursued by diverse groups of scientists such as veterinary surgeons, animal scientists, ethologists, psychologists and philosophers. In order not to overload this thesis with a multiplicity of terms I will refer to these various groups with the expression "theorists of animal health and welfare". I call the scientific field "the field of animal health and welfare" or "the science of animal health and welfare". I have chosen these new terms to avoid values attached to already existing terms and to avoid ambiguity. The term "animal welfare" as in animal welfare science may imply that the concept of health is less valued.³ The term "animal science" seems to have different meanings to different researchers.⁴ Thus I use "theorists of human health and welfare" as an expression for all those doctors, psychologists, sociologists, anthropologists, historians, philosophers and so forth that have contributed to concept formation with regard to human health, well-being and welfare, and for the area "the field of human health and welfare" or "the science of human health and welfare".

Aim of the thesis

My aim is to contribute to concept formation in the field of animal health and welfare by making a broad presentation of the various definitions of health, well-being and welfare present in that field, this in order to elucidate the complexity of concept formation. This will be done through a literature survey, an interview study with veterinary surgeons and a study of legislation concerning animals. I will then analyse, discuss and reduce some of the complexity of definitions or categories of definitions by making comparisons of the materials as well as add

³ Sometimes the term "animal welfare" is used to denote the branch of ethics that is concerned with promoting better animal life by minimising suffering as distinguished from animal rights. I will not in this thesis use the term "animal welfare" in that sense.

⁴ For example compare the scope of three journals using animal science in their titles. *Journal of Animal Science*: "a broad range of research topics in animal production and fundamental aspects of genetics, nutrition, physiology, and preparation and utilization of animal products." (http://jas.fass.org/misc/about.shtml 2007-09-04). *Acta Agriculturae Scandinavica, Section A – Animal Sciences*: "animal breeding and genetics, animal physiology and reproduction, nutrition and feeding, animal behaviour and welfare, general animal husbandry and systems of production, including economic and technical aspects, and hygiene and quality of animal products" (http://www.informaworld.com/smpp/title~db=all~content=t713690045~tab=summary 2007-09-04). *Animal Science Journal*: "all fields of animal and poultry science: genetics and breeding, genetic engineering, reproduction, embryo manipulation, nutrition, feeds and feeding, physiology, anatomy, environment and behavior, animal products (milk, meat, eggs and their by-products) and their processing, and livestock economics" (http://www.blackwellpublishing.com/aims.asp?ref= 1344-3941&site=1 2007-09-04).

discussions not present in the science of animal health and welfare. The analyses will be performed from a perspective where the diversity of the animal kingdom is taken into account, with regard both to species and to the roles that the animals have for humans (see Chapter 2). My contribution will not consist in a final definition of each of the three concepts, but instead in alternative clusters of definitions of them. Definitions in these clusters are such as do chosen not conflict with each other and are useful or fruitful for science as well as in daily practice.

DISCUSSION OF THE AIM

The perspective that the animal kingdom is diverse and may be divided in several ways is not new and unique. The discussion about what animals can suffer is an example of where such a perspective appears. Another example is the debate about which animal models best suit the purpose of resembling human physiology in the testing of pharmaceuticals. Regarding the concepts in this thesis, some authors state that their definition will apply to all animals, while others do not. Unfortunately, in the field of animal health and welfare (as well as animal ethics) there has not been a proper theoretical examination of the concepts using the perspective in question. Chapter 2 will give the relevant background and explain how I use this "tool" of animal diversity which is not only seen as genetic differences but also as my introduced perspective of roles that the animals have for humans.

This thesis focuses on the field of animal health and welfare and will mostly deal with non-human animals and definitions concerning them. The discussion in the field of human health and welfare is here used as a background. When necessary, certain comparisons with human medicine will be made. This text is basically a theoretical conceptual analysis. A part of this analysis concerns whether concepts are value-laden or not. However, the thesis is not a study of animal ethics, though obviously its conclusions may have ethical implications.

The material is gathered from three closely-related sources, a literature survey of the international scientific debate, an interview study about the concepts of health, well-being and welfare with doctors and veterinary surgeons in Sweden and a study of the legislation with regard to animals in England, Germany and Sweden.

The literature survey (Chapter 4) is a thorough review which compiles and analyses ideas in the often fragmented discussion of the meanings of the concepts. I have focused on the modern debate (from around 1980) as it exists in books and papers in the field of animal health and welfare. The literature used for the literature survey is to a great extent similar to that used in Nordenfelt's book (Nordenfelt 2006). Therefore some parts of Chapter 4 will resemble parts of his presentation. Despite the fact that we have been working closely together in the

project, in part having used the same material and sometimes reaching the same conclusions, our two texts differ. Nordenfelt's book starts with an overview of the discussion in the field of human health and welfare, continues with an overview of the discussion in the field of animal health and welfare and then goes on to a comparison of the two fields. Finally he attempts to extend his holistic theory of health in the human field to apply also to the animal field. Nordenfelt does not adopt the view of diversity of species (see Chapter 2) for the theoretical framework which is inherent in this thesis. The present thesis also relies on other material (interviews, legislation) which separates our discussions.

The interview study (Chapter 5) gives empirical data from experts in the practical field. The interviews were intended to clarify relations between the three concepts (welfare, well-being and health), an issue seldom discussed in the field due to the fact that a researcher often concentrates on outlining one concept. Still, to be able to demarcate a concept, knowledge of the relation between this concept and other concepts is needed. By interviewing experts in the practical field one can also grasp ideas that are not fully developed into consistent definitions in the theoretical science but may add new dimensions to the theoretical discussion. Also, the different veterinary surgeons were assumed to be a good source of differences with regard to species as well as indicating what could be useful definitions.

The study of legislation (Chapter 6) has been designed to give information about differences with regard to species, because legislation has different content concerning different animals both with regard to species and roles. The concept formation in the field of animal health and welfare influences (hopefully) the wording of legislation, so legislation may be an indicator of useful interpretations of the concepts. Also, legislation influences what kind of research it is possible to pursue. This in its turn has a strong impact on testing the practical implications of definitions of health, well-being and welfare. Legislation strongly influences the view of veterinary surgeons on these matters. Veterinary surgeons are steered in their occupations by different laws, where the concepts in question are evident. One result of this thesis may be a clarification and a more uniform interpretation of the concepts used in legislation as well as an enhanced understanding of the differences between different kinds of animals.

2. Different kinds of animals

Before we get to the chapter on methods, it is necessary to consider what the concept of animals refers to. There is very little public discussion on these matters. A distinction is often made between animals and humans. Humans are also animals, but the term "animals" often refers to non-human animals. Should we assume that the term "animals" refers to all non-human animals? Some biologists claim that the world contains at least 1.5 million species of animals (Kluge 2002, p. 49). What animals do we mean? All or only some? Assume that we find the following statement in a text.

We should respect the needs of other animals and avoid acting so that they cannot fulfil their needs.

If, as in this case, the text lacks a definition of the term "animal", the reader may be confronted with a dilemma. If the text is interpreted to mean that all animals have needs then this may cause practical conflict. Intestinal worms may then have needs such as living in humans. Humans, on the other hand, may have a need to avoid intestinal worms. Thus we need to resolve a dilemma. Should we help humans or intestine worms to fulfil their needs? If, instead, a further analysis shows that to be able to have a need certain mental abilities are required, then only some animals qualify for the protection mentioned in the example above. The conflict between the needs of humans or intestinal worms will not occur, because the intestinal worms will not fit into this narrower concept of animals. With this example in mind, I would claim that we in ordinary language as well as in scientific texts often fail to define or redefine (stipulate) the concept of animals.

In this chapter, I will attempt to define the concept of animal and indicate thereby how the concept will be interpreted throughout this text. First I will question some assumptions made when separating humans from the rest of the animal kingdom. My point is that all the different animals have to be regarded from their own point of view. Then I will attempt to demarcate which organisms are animals. Finally, I will argue for two ways of distinguishing between animals and introduce role-separation as an important means of analysis besides species-separation.

Distinguishing humans from animals?

Historically, much effort has been put into distinguishing humans from animals, trying to find the human uniqueness. For example, the ability to reason, speech and having a moral sensibility have been put forward (Bekoff and Meaney 1998, p. 248). A recent example of this is the following:

Understanding, describing and explaining their own life-world (including human-animal relationships) are typical human endeavours. (Antonites and Odendaal 2004)

In ethics it is common to say that humans have more and richer preferences than animals. In this view, humans share rudimentary preferences with animals. Here the animal kingdom is seen as uniform. There is no recognition of specifically animal preferences that humans lack. The philosopher and utilitarian J. S. Mill points out:

It is better to be a human being dissatisfied than a pig satisfied; better to be Socrates dissatisfied than a fool satisfied. And if the fool, or the pig, are of a different opinion, it is because they only know their own side of the question. The other party to the comparison knows both sides. (Mill 1987 (1863), p. 20)

This view is also evident in a modern view of animal rights such as Tom Regan's (Regan 1983), where one interpretation of his famous life-boat example is that he values a human's preferences higher than a dog's preferences (Pluhar 1997, but see also Lerner 2000). Unfortunately, this way of separating humans from other beings (i.e. the animal kingdom) is problematic when the group of non-human animals is regarded as uniform.

The world is different for different animal species. Different species have different capabilities with regard to the senses. Each species has adapted in its own way with regard to the way of living that is at hand for that species. How each species experiences its surroundings is dependent on the constitution of the senses of the species, the types of senses and the senses' ability to register. The number of senses and the range for each sense differ in the animal kingdom. Limits in the ability to experience through the senses will limit a species' ability to understand other species. Humans, who are mainly dependent on vision, have difficulty in understanding the world of smells for a dog. Sounds that for a human ear are pleasant to listen to may be frightening or disturbing for a cat with another range of frequencies that the cat is able to hear. Species with senses not existing in humans, like echolocation in bats and dolphins or electric communication in electric eels, will be hard to understand.⁵ Another example is the colours of some

⁵ M. Kiley-Worthington gives other examples: "the horse's eye differs from the human's in its anatomy and physiology; dogs hear sounds higher than human beings [and] pigs smell low

flowers. For a human the flowers are in one yellow colour, but for a bee there are distinct markers on the flower showing where to gather nectar. To get a view of the bee's world we need to make adjustments to the photographic method and interpret what the world could look like. The fact that the available senses and their range for a species also narrow the ability to experience and reason about the world, was put forward in biology by Jacob von Uexküll in his concept of *Umwelt*. Von Uexküll states the importance of studying the animal from the animal's perspective (Uexküll von 2001; Ruys and Schilling 2002).

We often falsely take for granted that only humans have unique preferences. But animals, too, can have unique preferences, stemming from the specific make-up of their senses. We need to compare the rat species with the kangaroo species, the goldfish species with the rat species and so on. But this is troublesome. We know that elephants for example have a good memory and are able to communicate over large distances with their infrasounds, and there are observations of something that may be regarded as ceremonial burial (Moss 1988). This seems to indicate that they have a high level of preferences, but we do not know anything about preferences that may be unique to elephants. As humans, we have trouble in understanding experiences of echolocation, electrical communication or seeing polarized light. Is it possible to understand a bee's preference that stems from its apposition eyes? The same type of questions can be asked with regard to humans. Is it possible to understand the preferences that stem from an experience by a human with no vision if you are a human with vision? A more fruitful approach is to say that there are preferences that are shared (with some differences in degree), some that are exclusively human and some that are for example exclusive to rats. All these have to be taken into account when we discuss differences between health, well-being and welfare among humans and animals as well as in ethics.

Distinguishing animals from the rest

In modern biological and medical dictionaries several proposals have been made for a definition of animals and some of them are listed here.

1. **Animalia:** ... the animal kingdom. In modern classifications it comprises all multicellular eukaryotic organisms with wall-less, non-photosynthetic cells. Animals are holozoic feeders, taking in solid organic material. All multicellular animals except the sponges possess some form of nervous system and contractile muscle or muscle-like

concentrations of substances". Also when it comes to cognition there are differences. According to Kiley-Worthington chimps are able to use symbols, rats are able to count and pigeons are able to form concepts. Kiley-Worthington also echoes the thought expressed by Miller that human language is only one of many forms of communication (Kiley-Worthington 1989).

cells, and most can move about. In older classifications protozoa were also included in the animal kingdom. (Lawrence 2000)

- 2. **Animal:** Any organism of the animal kingdom... Such organisms require oxygen and organic nutrients for existence and are usually capable of independent motion. Animals are distinguished from plants by the lack of chlorophyll and the presence of cell membranes rather than cell walls. (Anonymous 1986)
- 3. **Animal:** a living organism capable of movement that subsists on the breakdown of organic substances to a usable form, followed by synthesis of essential-nutrient organic compounds. The distinction between plants and some lower animals is ambiguous. (Anderson et al. 1998)
- 4. **Animal:** 1. A living, sentient organism that has membranous cell walls, requires oxygen and organic foods, and is capable of voluntary movement, as distinguished from a plant or mineral. 2. One of the lower a, organisms as distinguished from humans. (Steadman 2006)
- 5. **Animal:** 1. a living organism having sensation and the power of voluntary movement and requiring for its existence oxygen and organic food. 2. of or pertaining to such an organism. (Miller-Keane 1992)
- 6. Animalia: A multicellular, heterotrophic organism that develops from an embryo derived from gametes produced in specialized organs or surrounded by somatic cells. Typically, animals are motile, at least during some stage of the life cycle, and have sensory apparatus with which to detect changes in their immediate environment. Protozoa are unicellular but otherwise resemble animals in many ways (although there are plant-like protozoons) and were formerly classified as an animal phylum; they are now more usually classified in the kingdom Protista. (Allaby 2003)
- 7. **Animal:** Any living organism distinguished from plants by the lack of chlorophyll, the requirement for complex organic nutrients, the lack of a cell wall, limited growth, mobility, and greater irritability. (Parker 1997)

Different criteria are evident in different definitions and central aspects when it comes to defining an animal seem to be the following.

- Multicellular [1, 6]
- Lacks photosynthesis (chlorophyll) [1, 2, 6, 7]
- **❖** Requires organic nutrients [1, 2, 3, 4, 5, 6, 7]

- Requires oxygen [2, 4, 5]
- Lacks rigid cell walls, such as plants and fungi have [1, 2, 4,
 71
- **❖** Capable of (voluntary) movement [1, 2, 3, 4, 5, 6, 7]
- Has some form of nervous system [1], is sentient [4], has sensations [5], has a sensory apparatus [6] shows greater irritability [7]

All of these criteria with the exception of the last two will probably have no application with regard to the aim of my thesis. The capability of (voluntary) movement would be central for some health theories. I consider the last criterion to be critical for the analysis of health, well-being and welfare theories. This criterion holds for almost all animals with the exception of the sponges (Lawrence 2000). With regard to definition [6], Porifera (sponges) are sometimes excluded from the animal kingdom because of their different structure. If Porifera are excluded, all animals will have at least a rudimentary nervous system. Therefore the crucial question for this thesis is to decide if the last criterion is valid. If mental experiences are included in the definitions of health, well-being or welfare there will be different implications regarding the use of this criterion. If the criterion is accepted a definition referring to rudimentary mental abilities is applicable to all animals. If the criterion is rejected the implication will be that rudimentary mental experiences are not proper for a definition that aims to include all animals. For this thesis I choose a definition of animal that will contain at least a rudimentary nervous system. This makes the group homogeneous with regard to having some form of nervous system, which will narrow some questions. Instead of asking "Are mental experiences necessary for well-being?" the question is rather "Which kinds of mental experiences are necessary for well-being?" Still, for other possible definitions of the concepts of health, well-being and welfare this will be of minor importance. I will, after the empirical chapters, reconsider my choice.

Distinguishing animals from animals

SPECIES

There are several possible ways of distinguishing between animals. One common way is to separate with regard to species. The definition of a species differs slightly between different dictionaries.

1. **Species:** A taxonomic collection of interbreeding populations that are reproductively isolated from other such collections. A group of closely related species forms a genus.

Biologic species: An intrabreeding group of organisms that physiologic and morphologic variation in contrast to the more classical concept of a species having invariable traits. (Anonymous 1986)

- 2. **Species:** The category of living things below genus in rank. A species is a genetically distinct group of demes that share a common gene pool and are productively isolated from all other such groups. (Anderson et al. 1998)
- 3. **Species:** A taxonomic category subordinate to a genus (or subgenus) and superior to a subspecies or variety; composed of individuals similar in certain morphologic and physiologic characters. (Miller-Keane 1992)
- 4. **Species:** In taxonomy, it is applied to one or more groups (populations) of individuals that can interbreed within the group but that do not, under natural conditions, exchange genes with other groups (populations); it is an interbreeding group of biological organisms that is isolated reproductively from all other organisms ... this concept is not a rigid one. Most species cannot interbreed with others; a few can, but produce infertile offspring; a smaller number may actually produce fertile off-spring. (Allaby 2003)
- 5. **Species:** A biologic division between the genus and a variety or the individual; a group of organisms that generally bear a close resemblance to one another in the more essential features of their organization, and breed effectively producing fertile progeny. (Steadman 2006)
- 6. **Species:** In sexually reproducing organisms, a group of interbreeding individuals not normally able to interbreed with other such groups. (Lawrence 2000)
- 7. **Species:** A taxonomic category ranking immediately below a genus and including closely related, morphologically similar individuals which actually or potentially interbreed. (Parker 1997)

In comparing these definitions⁶ the following emerges. A common gene pool, morphological similarities and/or physiological similarities are traits that are used to sort out different species. Common to most of these definitions (if the animal is

definition of species in special dictionaries is sufficient.

⁶ There are in the biological sciences a more distinct set of species concepts such as the Evolutionary Species Concept, the General Lineage Concept, the Biological Species Concept, the Recognition Species Concept and the Phylogenetic Species Concept (for a short introduction to these concepts and further references, see Helbig et al. (2002)). For the aim of this thesis, the

sexually reproducing and not only asexually reproducing) is that individuals in a species may breed with each other and produce fertile progeny. Also, individuals from different species are mostly incapable of producing fertile progeny. As *A Dictionary of Zoology* points out, some examples of fertile hybrids between two species exist (Allaby 2003). One of the most typical examples may be geese, where fertile hybrids of Greylag Geese and Canada Geese occur (Kampe-Persson and Lerner 2007).⁷ These two species belong to different genera which is a higher taxonomic level than species.

In the nomenclature, species is below genus, family and class in rank and above subspecies and variety in rank. The classification and names of different levels in the animal kingdom differ from authority to authority, but I will here follow *Henderson's Dictionary of Biological Terms* (Lawrence 2000). To make it easier to understand the different levels of nomenclature, let me give an example. The bee, hen, great tit and blue tit are species. The great tit and the blue tit are closely related and belong to the same genus, tits. The hen, the great tit and the blue tit all belong to the same class, birds, while the bee belongs to the class of insects. The order of the different animal groups is often chosen with regard to evolution. In the animal kingdom there is often a separation between two main groups, vertebrates (where the class of birds belongs) and invertebrates (where the class of insects belongs).

One important characteristic with regard to differentiation is how the nervous system is constituted. Vertebrates have a nervous system with a central brain and nerves dorsally placed in a string in the body. Almost all invertebrates (depending on the definition of animal) also have nervous systems, but the construction of the nervous system differs. In the big class of insects, the nervous system is placed ventrally, where nerve centres are connected with nerves. There is no central nervous system as in vertebrates. Mental abilities and the function of senses differ between species and species groups. The eye, for example, has evolved several times and is found in several animal groups. A comparison of an insect eye with a human eye shows great differences with regard both to anatomy and function. A comparison of an eye of another invertebrate, the octopus, with a human eye shows great similarities with regard both to structure and function. Thus great similarities are possible even if species have no close relationship.

ROLE

But a species-oriented separation is not enough. The species-oriented approach needs to be combined with a study of animal roles. Animals have different roles in

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⁷ These two species are very morphologically different. The Greylag Goose is mostly grey and the Canada Goose is distinctively black and white on the neck.

society and this kind of separation is totally different from the first. Here a dog and a cat can both be pets even though they are different species. A dog can also as a puppy be a pet and later on be sold to a researcher to become a laboratory animal. Or more obviously, a dog can at home be a pet, but in the woods together with the owner a hunting dog. Here we need to think of each individual in each particular situation. The role the animal has is situation-specific. For a dog the different roles may be as follows:

- ❖ Wild (or "feral")
- Pet
- Competition (agility or greyhound)
- Exhibition
- Hunter
- Guard dog
- Police dog
- . Laboratory animal
- Blind dog
- Production (food in some countries in Asia)

Whether "wild" actually could be a role or if it is just absence of a role could be discussed. A "wild" animal could be further divided into several different categories such as "wild animals with no interaction with humans", "wild animals that are hunted" and "wild endangered animals (where humans try to preserve the species)".

The importance of pinpointing the role correctly is highlighted by M. Kiley-Worthington (Kiley-Worthington 1989). In a table he showed that the amount of behavioural restriction for elephants differed when wild elephants were compared with elephants in zoological parks (where no handling is practised) or circus animals (well handled, trained, and walked daily). Kiley-Worthington showed that there are more restrictions in the areas of zoological parks and circuses than in the wild. Also, there was a difference when elephants in zoological parks were compared with elephants in circuses. There was more restriction of behaviour in the zoological parks than in circuses. If we only make a distinction between wild animals and animals in human care we will miss the difference between animals

⁸ In practical life, this is not so common. For example, certain horses are bred and trained for sports and others are bred and trained for working in the forests. Mostly the particular animal stays in its role throughout life (especially farm animals which may be bred only for producing food), but a horse bred for sports may if it is good enough retire and be used for breeding.

in zoological parks and circuses. This implies that we need to specify the roles as precisely as possible, not only as "the elephant in human care", but rather as "the elephant in human care in a zoo" as distinguished from "the elephant in human care in a circus".

SPECIES AND ROLE

Species and roles are two distinctly different modes of distinction in the group of animals and both are needed to understand theories of welfare, well-being or health. Whether a theory is based on the concept of species or that of a role tells us if the theory is to be interpreted in a biological sense (species) or in a sociological sense (role). This will have implications for the animals concerned. The two ways of distinguishing between species or between roles mix also with each other, so that for each individual there may be issues concerning the species aspect and/or the role aspect. In a certain situation where the role of an animal is crucial, the species of an animal may be of minor importance. In another case where the species of an animal will be crucial, then the role will be of minor importance.

Other concepts, which I will show are less suitable, have been used to distinguish between different animals. Examples of such concepts are domestic and feral. In a domestic race (a subgroup of species)⁹ the natural reproduction is somewhat changed to suit human interests (Parker 1997; Allaby 2003). A domestic individual is more or less tame. Most domestic animals are found within the groups of mammals and birds and few species have been domesticated. When you study different areas of animal use, the term "domestic animal" is not always very valuable. Among farm animals in Northern Europe you only find domestic animals, but if you turn to pets, zoo animals and laboratory animals you get another result. In all these three roles the actual individual may be a domestic dog, but the actual individual may also be a wild but captive lizard. Individuals of the same domestic species may also have different roles. A better way to analyse the concept of domestic animal is by the combination of the species and the role aspect. A domestic cat (*Felis silvestris catus*) is a member of the race house cat in the role of being a house cat.

My argument is more obvious when it comes to the term feral. With regard to some of the dictionaries used above for defining the concepts of animal and species, the term feral may denote two different states: 1) a wild or undomesticated animal, or 2) a formerly domesticated animal now reverted to a wild state (Lawrence 2000; Allaby 2003; Steadman 2006). These two states are not the same. In the first state new progeny results from natural selection and all

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⁹ Some see them as separate species from the wild form.

former reproductions were due to natural selection. In the second state new progeny results from natural selection but some of the former reproduction was influenced by the choices of humans. To avoid this conceptual problem, role and species (race) may help to clarify the issue. A feral house cat is still the race house cat but in a wild role. A European wild cat (*Felis silvestris silvestris*) is another race and in the wild role. In this text I try to avoid concepts such as domestic and feral. They are imprecise and risk being either too wide or too narrow. Better is to specify the species and in which role the individual occurs.

3. Material and methods

Throughout the thesis the distinction between role and species will serve as a tool in the conceptual analysis which is the main method of my thesis. Definitions of the different concepts as well as classifications of definitions will be analysed with regard to the following: if no restriction of species or role occurs, if species-restriction occurs, if role-restriction occurs or both role- and species-restriction occur. With the information given using this tool one can more easily choose between definitions if for example one wants a definition of welfare applicable to all animals or only to a selected part of the animal kingdom. Having said this about the role and species tool I will now turn to the method of conceptual analysis.

Where should a philosopher start doing a conceptual analysis? It all depends on what kind of problem one wants to solve. If one is searching for a common use of a concept, lay people should be asked. If one searches for a specific usage in a science, scientists or other experts in this area should be asked. This thesis focuses on the scientific use of the concepts and that has been the guideline when choosing the relevant material. The material is of three different kinds:

- Articles and books about the concepts written by researchers
- Qualitative interviews with veterinary surgeons (and doctors)
- Recent legislation in three countries and relevant international legislation for these countries

These three kinds of materials have several relations to each other and all have to do with the science of animal health and welfare. With this in mind one might assume that they represent the same ideas about the concepts. My reason for distinguishing between the materials is that they have different purposes and derive from different backgrounds. The books and articles may be written by philosophers, animal scientists, ethologists or veterinary surgeons, some with much practical experience, some with little, but the authors are all theoretical experts on these concepts. The veterinary surgeons and doctors participating in the interview study have a lot of practical experience of the concepts but are not theoretical experts (except for one). Recent legislation has been written by experts on legislation, but maybe not by experts on the concepts chosen in this study. Still, legislation is influenced by experts on practical as well as theoretical

matters. Legislation also influences practical as well as theoretical matters with regard to the concepts.

What do I attain in the interviews? Is it the explicit definitions of doctors or veterinary surgeons or the language-use of these people? Definitions and language-use are linked to each other but need not be the same (Nordenfelt 2001). The informant is supposed to give explicit definitions in the interview. In the analysis of the interview the proposed explicit definitions are compared with the language-use of the informant to see if they are in harmony. If they are not, my intention is at least to characterise the concepts through the language-use of the informant. By direct and indirect questions about the concept and closely related concepts I get close to where the boundaries are situated between the different concepts on the informant's conceptual map (see Appendix A).

What do I achieve in the legislation study? If definitions have been put into legislation, it is to be hoped that they will be agreed upon. The greater the consensus the easier it will be to interpret the sense of the legislation. The interview study and the study of legislation are made to enable a comparison between the theoretical definitions that are proposed within the scientific field and definitions that seem to be in use.

Conceptual analysis

PURPOSE OF THE CONCEPTUAL ANALYSIS

A central method employed in this thesis for all the three materials is conceptual analysis. Nordenfelt (2001) argues that there should always be a purpose to the analysis of concepts. In the context of health analysis he proposes five purposes.

- Investigating the essence of the notions of health, well-being and welfare.
- Investigating the use of the terms "health", "well-being" and "welfare" in medical research. Here we can find a few subdivisions. The most important one is between theoretical medical research and clinical research.
- 3. Investigating how the terms "health", "well-being" and "welfare" are commonly used in medical practice. Here are subdivisions in accordance with what communities of

¹⁰ The comparison of the written legislation and interviews with legislative writers would also have been a possible way of analysing and discussing these issues. Some of the usage of legislative writers is captured in the studies of commentaries and preparatory works.

- medical practice we are referring to (doctors, nurses, occupational therapists, etc.).
- Creating a consistent theory of health, well-being and welfare concepts which is as close as possible to one or more of the actual uses.
- 5. Creating a theory of health, well-being and welfare concepts which without being extremely close to any of the current uses will serve the purpose of medical research or medical practice, or any of its subcategories, better than the current conceptual systems do. (Nordenfelt 2001, p. 4-5)¹¹

The second and third purposes differ with regard to scientific research and practical usage. There may be a difference in how the concepts of health, well-being and welfare are defined when the animal theorists are compared with the veterinary clinicians. The fourth and fifth purposes differ with regard to present use and forthcoming use. Creating a theory in the fourth sense is reconstructing an actual use in the field, for example by compiling texts which analyse a certain concept and filling in the gaps to make them consistent. Creating a theory in the fifth sense is suggesting a new reference for the terms used. This may be done in several ways, such as narrowing the meaning of a concept, splitting a wide concept into two or more concepts, or giving a totally new meaning to the concept. This is sometimes necessary for example because of the nature of a science or because too much confusion exists concerning the interpretation of the concepts.

The first purpose is today seen as problematic because it relates to so-called "real definitions" which characterise the true nature of the world. It is not, however, a purpose of mine in this thesis. Even if I had this purpose studying only the science of animal health and welfare would most probably not give all the material needed to make claims about the true essence of, for example, health. My study will address purposes 2, 3, 4 and 5. The literature survey will address purpose 2, the interview study will mainly address purpose 3 but also purpose 2. The creation of a consistent theory, purpose 4, will also be present, first to grasp the view of the informants, later on to combine insights from all the studied fields (Chapter 8). In the end I will propose some ideas as to what definitions in this field might look like. I will focus on purpose 5, creating a better distinction between the concepts to make them more useful, but whenever possible I will choose definitions that are close to common usage.

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¹¹ I have added the notions well-being and welfare for my present purposes.

DEFINITION

This study will deal with definitions of concepts. The most common way of presenting a definition is in this form:

Concept = def. An analysis of the concept.

If we use formal philosophical language:

Definiendum = def. definiens

In this thesis I will present definitions in the following way:

Def Concept xx = An analysis of the concept

where concept stands for health, well-being or welfare and xx is the reference number throughout the thesis.

KINDS OF DEFINITIONS

There are many kinds of definitions. Richard Robinson noted that there are at least 18 kinds (Robinson 1950). Some of these are closely related and some are more distinct from each other. There is no universally accepted division between different kinds of definitions. Aristotle, for example, claimed that all definitions were real definitions, not possible to invent but only to discover. They could be arranged in a hierarchical order and their meaning had an existing correlate in the real world. Today we have accepted that a definition in a certain area, say biology, of a term, say welfare, may differ from the definition found in a dictionary for lay people. Robinson distinguishes types of definition according to purpose or method. In the case of the latter type there is for example ostensive definition, which simply points out the reference for a definition. When it comes to purpose there are real definitions (thing-thing definitions) and nominal definitions. Real definitions are used for things. Nominal definitions are used for words, signs or symbols. Nominal definitions can be of two kinds: word-word or word-thing. The word-thing definitions can be further divided into lexical and stipulative definitions (Robinson 1950). From the point of view of purpose it is common to acknowledge two extreme points on a scale of definitions. These endpoints are stipulative definitions and lexical definitions. A stipulative definition is a definition made for a certain purpose, disregarding whether there is a true corresponding meaning. It is not possible to say if a stipulative definition is true or false. The only way it can be evaluated is in terms of its usefulness for its purpose. A lexical definition, on the other hand, refers to some kind of common usage of the term. A lexical definition is better if it is in line with, for example, the usage of the term among scientists than if it is not. In between there is a third kind of definition, explication. This type of definition is based on a lexical definition but changed through stipulation to better suit the relevant purpose (Nordenfelt 1982). Another way of distinguishing between definitions is between theoretical definitions such as lexical, stipulative or explicative definitions on the one hand and definitions that could be used in practice such as operational definitions on the other.

Within the field of animal health and welfare several kinds of definitions are recognised. Arrranged according to purpose one could get the following list.

- Criteria list (Five Freedoms) (not an explication of welfare, (Radford 2001))
- 2. Theoretical "single-sentence" definition
 - a. Lexical definition (McGlone 1993; Stafleu et al. 1996; Radford 2001)
 - b. Explicative definition (Radford 2001)
- 3. Operational definition (Gonyou 1993; Stafleu et al. 1996)

The Five Freedoms of the criteria list are not an explication of welfare, they are rather seen as guidelines for proper treatment of animals (Radford 2001, pp.266-267, see Chapter 4). Among the theoretical "single-sentence" definitions there are the lexical definitions (in its most obvious case a reference to a dictionary) and the explicative definitions (which are based on lexical definitions but changed to better suit the purpose). 12 The operational definitions are understood as definitions that could be practically used. In the discussions about the concept of welfare it is striking that researchers combine theoretical "single-sentence" definitions from one area (for example welfare as experiences or feelings) with operational definitions which are based on measures that have another theoretical background (commonly measures that are based on a theory of biological functioning) (Stafleu and Vorstenbosch 1999). This combination could be hard to defend because the connection between for example a theoretical concept of feelings and operational definitions based on biological functions is not easily explained. Though one can measure a high stress level in the blood there is no clear indication as to what the animal actually feels in the situation.

I have in this thesis focused on a classification of definitions according to purpose. This thesis will focus on the more theoretical definitions of the concepts (lexical, stipulative and explicative), avoiding operational definitions. I have as much as possible gathered data where concepts are explicitly defined or discussed (with the exception of legislation).

account of scientific evidence. I have chosen to exclude this category.

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[&]quot;Desciptive types of definitions" mentioned in Scientific Committee on Animal Health and Animal Welfare (2001) could be seen as a third category. Unfortunately no further explanation of this kind of definition-type is offered more than that the evaluation of welfare needs to take

DEFINITIONS AND VALUE

A definition could be influenced by different values. One could differentiate between value-free and value-laden definitions as well as between evaluative and non-evaluative definitions. A definition is evaluative when the *definiens* contains evaluative terms and non-evaluative when the *definiens* lacks evaluative terms. A definition is value-laden when values are associated with the concept, for example the concept of democracy is often positively value-laden regardless of whether the definition lacks or has evaluative terms. When it comes to the concepts in this study, all the definitions may be seen as positively value-laden.

In the science of animal health and welfare there has been discussion concerning the role of value and whether definitions of the concepts should be evaluative or not (Broom 1988; Tannenbaum 1991; Sandøe and Simonsen 1992; Duncan 1993; Mason and Mendl 1993; Broom 1996; Fraser et al. 1997; Alrøe et al. 2001; Nordenfelt 2006). In this thesis I accept both definitions that are evaluative and definitions that are non-evaluative.

Literature survey

GATHERING OF DATA

In the literature survey, the first step was to use several search engines for journal articles and books within several areas, but also more general search engines (Table 1). The terms were "health", "well-being", "wellbeing" and "welfare". To limit the searches, terms such as "nature" (as in nature of), "meaning" (as in meaning of) and "concept" (as in concept of) were used. In some databases (mainly human medicine), when too many records were found, the term "animal" was used to limit the search. Each search in each search engine involved a combination of a concept and a word (sometimes two when the term "animal" was used) to limit the search. All the combinations were searched for (health and concept; health and meaning; welfare and concept; etc.).

The second step was to go through texts (from the first search) with a theoretical section to find other references which seemed to be important. This was done by reading the text noting references or through the reference list. To some extent the suggestions of the databases with regard to related articles were used. In the search engines few books appear owing to the nature of the databases. Therefore this second step ensured that important books were also found. The third step was to communicate with some well-established researchers in the field in order to see

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¹³ Sometimes the term "well being" is used as a key word in the literature. To search for "well being" is problematic in some databases because of the risk of getting all results including the terms "well" or "being".

if I had missed some text that they regarded as important. In the texts gathered in all these three steps, I have looked for explicit singular definitions. If there was no such explicit definition I did not make a more thorough analysis in a search for more implicit definitions, unless later works refer to the text as a source for concept formation. By combining the three steps I have achieved an overview of the explicit singular definitions of health, well-being and welfare in the field.

Table 1. Search engines and their features.

Scientific field	Name	Available years
Veterinary	Agricola (AGRICultural OnLine	1970-
medicine/Agriculture	Access)	
Biology	Biological abstracts	1992-
	Biological sciences (23 databases)	1982-
Philosophy	Philosopher's index	1940-
Psychology	PsycINFO (OVID)	1985-
Behavioural science	Eric (Educational resources	1966-
	information center)	
Medicine	Pubmed (Medline)	1950-
	Amed (Allied and complementary	1985-
	medicine) (OVID)	
	Cinahl (Cumulative index to nursing	1982-
	and allied health literature) (OVID)	
Medicine/Science	Toxline	Last five years
General (Natural sciences,	Web of Science (ISI Web of	1986-
social sciences, arts and	Knowledge) (3 databases)	
humanities)		

MATERIAL

The material consists of journal articles, scientific reports and scientific books from the areas that concern farm animals, laboratory animals and zoological animals. Because of the expanding interest in defining the concepts during the period 1980-2007, most texts in the study belong to this period, with an emphasis on the 1990s and onwards (see Chapter 4 for a historical review).

ANALYSIS

Only explicit definitions were analysed. No special adjustments in the analysis were made for this material.

Interviews

GATHERING OF DATA

The interview study is a part of a wider interview study comparing doctors with veterinary surgeons (see Chapter 1). In this thesis only the interviews with the veterinary surgeons are used. Due to the matter of the interview guide and the method of analysis it is possible to separate this group of interviews for an analysis of its own (see below).

The method of the interview study was to use semi-structured qualitative interviews. All central questions in the interview guide needed to be answered (see Appendix A). But the wordings and order of the central questions differed in accordance with the interview situation. Also additional questions were often used for clarification. Only the thirst three central questions were asked in their order in the interview guide and my aim was to see if the concept of well-being was used spontaneously by the informants. Two interviews were performed to test the original interview guide. This resulted only in minor adjustments being made to the interview guide, and the interview with the veterinary surgeon was included in the study. In the interviews at the end of the study four additional questions about ethical and practical implications were included. These were thought to provide information for another purpose than that of this thesis. They do add some material for the analysis of the consistency of the informant and they may give additional ideas about how the conceptual world of the informant is shaped.

In the end, the interview form contained 31 questions within a total of 7 areas: basic definition, area of definition, relations of concepts, mental aspects, definitions in practice, other important words, and alternative definitions. Only one interview was performed with each informant and the informants were not given the opportunity to see the transcribed text of the interview for comments. I analysed the interviews between the different interview occasions, but no improvements or changes in the subsequent interviews were introduced as a result of these analyses. The interviews were all held in Swedish (see Appendix A).

To get informants purposive sampling focusing on expert sampling was used. *The crossdisciplinary research group on health and welfare* (see Chapter 1) chose crucial subject areas within veterinary medicine, so that a great variety was present (Table 2). The purposive expert sampling was done within the field with regard to two criteria. First, the informants should have been working for many years and not be recently educated. Second, the informants should be the kind of persons or have the kind of occupations such as probably has made them think about the concepts in their work. Especially the latter criterion was influenced by the knowledge within the research group regarding possible veterinary surgeons.

Still, the number of veterinary surgeons in Sweden is quite small, which makes it possible to get an overview of which ones are experts. The informants were not informed beforehand about the questions. Therefore many of the answers provided by the informants were spontaneous.

MATERIAL

The informants were 8 veterinary surgeons (labelled V1-V7 or VT). The professions or areas were varied and are summarised in Table 2. The aim was to gather as diverse backgrounds as possible to get as many different definitions as possible. The informant chose the place where the interview was performed. The assumption was that the informants then were more willing to talk during the interview. Each interview lasted for 75-120 minutes, was taperecorded and was performed by one interviewer (except for the test interview with one additional supervisor evaluating the questions and suggesting additional questions). The interviews were performed between spring 2002 and spring 2004 (Table 3). Presenting dates for the interview occasions makes it more possible to track if some interviews could be influenced by legislation brought into force during the period or influential texts from the scientific area.

Table 2. Professions or areas for informants in the interview study.

Veterinary surgeon	
Laboratory animals	
Pathologist	
Veterinary cardiologist	
Renal or urinary disorders	
Wild animals	
Zoo animals	
County veterinary officer	
Horse practitioner	

Table 3. Dates of the different interviews with veterinary surgeons.

Label	Date
VT (Test interview)	2002-04-16
V1	2002-10-04
V2	2002-10-29
V3	2003-01-21
V4	2003-04-07
V5	2003-04-07
V6	2004-01-22
V7	2004-01-28

Only one of the informants had difficulty in providing adequate answers to the questions, still several excerpts are used from this interview because of the richness of examples on theoretical matters.

ANALYSIS

A phenomenographical method has been used to analyse the interviews. The phenomenographical method is applicable to several kinds of studies, one of which concerns how people conceptualise various phenomena (Dahlgren and Fallsberg 1991; Marton 1994). The analysis consists of several steps even where these steps are not easily to be separated in the process (Sjöström and Dahlgren 2002). The method used by B. Sjöström and L. O. Dahlgren, which I have followed, consists of seven steps.

- 1. Familiarization with the material
- Compilation of answers of all respondents to a certain question
- 3. Condensation or reduction of individual answers
- 4. Preliminary grouping or classification of similar answers
- 5. Preliminary comparison of categories
- 6. Naming the categories to emphasize their essence
- A contrastive comparison of categories, which contains a description of the unique character of every category as well as a description of resemblances between categories. (Sjöström and Dahlgren 2002)

The first step means chiefly reading through the transcripts to familiarise oneself with them and be able to correct faults. In this study all the interviews have been transcribed by another person than the interviewer, all by the same person. The amount of information in the transcribed version of the interview influences the analysis (Kvale 1997). In this study the transcribed text from each of the interviews was written word for word, including repetitions and expressions of hesitation. The text included long and short pauses, laughter and supportive words such as "yes" or "no", and was written with punctuation. No specific marking was done for the strength of the voice or special words stressed by the informant. I have re-listened to the tapes to correct faults in punctuation or wording in the transcripts. The length and occurrence of pauses made by the informant has not been weighed and analysed. On some occasions, though, it has been helpful when deciding about how important the concept actually was for the informant.

During the listening-through process I familiarised myself with the material and I noted features that I had reacted to in the interviews. I then systematically read through the interviews several times, each time focusing on one concept or some of the questions, trying to get the meaning of the concept and its relations to the other concepts, fulfilling steps 2 to 5. For steps 6 and 7 the suggested meaning of the definition offered by the informant has been used as a categorical name (for example natural behaviour when an informant defines welfare with reference to natural behaviour).

I indicate merely whether the informant is a veterinary surgeon or a doctor and not the specific area of work or the informant's sex. This is mainly to preserve the anonymity of the veterinary surgeons. The number of veterinary surgeons in Sweden is relatively low and a combination of sex or occupation with the statement would give so much information that anonymity is lost.

ETHICAL CONSIDERATIONS

The interview study used the recommendations from the Swedish Research Council. All informants voluntarily agreed to being interviewed. No questions contained sensitive personal matter or sensitive ethical issues regarding the informants involved. All the presented results preserve anonymity.

Study of legislation

GATHERING OF DATA

I have decided to choose three European countries, Sweden, England and Germany, because the countries have a long tradition (dating back to the 19th century) of legislation in the area of animal protection (Ekesbo 1997; Lorz and Metzger 1999; Ryder 2001; Kluge 2002). The actual pieces of legislation together with important preparatory works or commentaries have been used for the philosophical analysis. My focus is on the primary legislation such as codes or acts. Secondary legislation has been analysed when necessary. Generally the main articles in the beginning of an act of legislation present the aim of that act. Subsequent (or secondary) legislation often follows the aim given in higher-order legislation. This text is not a juridical one and therefore I have made some simplifications when it comes to presentation of the different levels of legislation. I have not put much effort into differentiating between different levels of legislation because of the nature of the study. Legal texts from different countries or international bodies use different notations. I have chosen the term "article" to be the same as "article" in international law, "section" in English law and "§" in German and Swedish law. For parts of an article I have used the word "section".

Each country has been visited once to gather data about the legislation and the concepts in the legislation. In England a meeting with the staff at the Department

for Environment, Food and Rural Affairs (DEFRA) (especially David G. Pritchard and Paul Skelton-Stroud) took place on January 31 2003. In Germany a meeting with Rolf Krieger and Jörg Luy took place on September 15 2004. In Sweden a meeting at the Animal Welfare Agency with Torsten Jakobsson took place on May 6 2005.

MATERIAL

The analysis of legislation concerns recent national and international legislation in use. I have used somewhat different sources for the study of legislation apart from the actual laws. For Germany, two books of commentary on legislation have been mainly used (Lorz and Metzger 1999; Kluge 2002). For England, one such book has been used (Radford 2001). 14 as well as explanatory notes offered by the legislators and the draft report for the new Animal Welfare Bill (DEFRA 2004), which received assent in 2006 and entered into effect during 2007. For Sweden I have used preparatory works such as the draft version of the law with commentaries (*Proposition*, abbr. as *Prop*) and official reports on the subject of the law (Statens offentliga utredningar, SOU). The difference between the countries lies in the fact that in Sweden there are more public preparatory works than in the other countries and hardly any commentaries in this area of legislation. For the analysis of European conventions I have used the text of the convention together with the explanatory report concerning it. The explanatory report is not "an instrument providing an authoritative interpretation of the text", but rather it "facilitate[s] the understanding of the Convention's provisions". 15

This study analyses only legislation in force. Pieces of suggested legislation still under investigation are not within the scope of the study. Earlier pieces no longer in force were only consulted when needed for explanatory purposes. For all the countries and international legislation the pieces of legislation in force on January 1 2008 are considered.

ANALYSIS

Because of the scarcity of explicit definitions, also implicit definitions have been taken into account. Aspects of the concepts have been identified and analysed. The main focus has been on the main articles in each legal act, because these articles often set the framework of the act. There has been a difference in the amount of coverage within this study. For Sweden a full picture is given of legislation that concerns aspects of health, well-being and welfare, whereas for the

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¹⁴ Recommended by David G. Pritchard of DEFRA, UK.

¹⁵ For example the Explanatory Report of the Convention on the Conservation of European Wildlife and Natural Habitats (1979).

other countries and international law only passages where interesting comparisons could be made have been presented.

THE LEGAL SYSTEMS

The English legislation is constituted by acts and case-laws. England has a long tradition of courts interpreting legislation but also writing new legislation through cases. I have chosen to study only English legislation, because Scotland, Wales and Northern Ireland have their own legislative responsibility for animal welfare.

The legal system of Sweden is based on legislation and only to a minor extent on cases where the laws are applied. Sweden is regarded as a civil law country. Legislation in Sweden is performed by three authorities. The acts or codes are decided by the Parliament and have a general character. The Parliament sets the aims and limits of the law. Then the government decides the ordinances, which are more detailed and specific. Finally there are regulations made by the different agencies, which set the most detailed level, for example the amount of space needed for the housing of certain animals.

Germany belongs to the family of civil law countries and has the most structured legislation considered in this study. The legislation in Germany is constructed in a hierarchical order. At the top there is the German Basic Law (also known as National Law, German constitution, *Grundgesetz*) (Freckmann and Wegerich 1999). The Basic Law gives permission to make laws and in this law the hierarchical order is settled. Germany is a federal republic with states (*Länder*) and there is legislation at both the federal level and the state. In matters of conflict between laws at different levels the rule is that the Basic Law always outweighs other federal laws and that federal laws always outweigh state laws. In this study the main emphasis has been on the Basic Law level and the federal law level. The pieces of legislation existing on the federal level in Germany resemble the laws in England and Sweden which are considered in this study.

All three countries are members of both the European Union and the Council of Europe. Legislation from the European Union is written on three levels:

- Regulations: These are directly binding in their entirety for all the member states. They are regarded as law and thus need not be integrated into national legislation
- Directives: The results to be achieved by these are directly binding, but each member state has to decide how to integrate them into national law

Decisions: These, like regulations, are binding in their entirety, but only upon those to whom they are addressed (Eurogroup for Animal Welfare 1992)

Directives from the European Union are written as a minimum level of legislation, whereas each country is able to have stronger claims in its national legislation.

Legislation from the Council of Europe is written on two levels:

- Recommendations: policy statements to a government proposing a common course of action to be followed
- Conventions and agreements: these are binding on the states that ratify them, but need to be integrated into national law (Eurogroup for Animal Welfare 1992)

I have here studied different conventions written by the Council of Europe regarding animals. Each of them influences the national legislation if and when the countries have signed the particular convention. If a country has signed a convention, then that country is bound by that convention. A convention itself is no legislation. It has to be integrated into national legislation and the different countries are free to choose how. A convention is written as a minimum level of legislation. Each contracting country is free to raise its level of legislation above the level laid down in the convention.

All three countries have also signed international treaties. None of these international treaties refer to the concepts of health, welfare or well-being in such a way that conceptual analysis was applicable.

It is important to note that most of the international "legislation" does not constitute true legislation. International treaties, conventions and directives need to be integrated into national legislation to be brought into force. Still, the countries are bound to do this. Only regulations and decisions from the European Union are "true" legislation.

4. The three concepts in the literature of the science of animal health and welfare

In the science of animal health and welfare many proposals have been made for the definitions of the concepts. Much effort has been put into discussion about the concept of welfare, less into discussion about the concepts of health and wellbeing. In this chapter a broad analysis of the different approaches within the science of animal health and welfare will be performed. I will start with a brief description of the quality of the texts I have used and a summary of the trends in the science of animal health and welfare, with the emphasis on conceptualisation. Then I will go through the different definitions of the concepts. Relations between the three concepts as well as some closely-related concepts will be discussed. Within the theoretical discussion some attempts have been made to gather similar definitions into categories. These will be presented and discussed in Chapter 5.

Historical and theoretical comments

KIND OF SCIENTIFIC MATERIAL

The conceptual discussion within the science of animal health and welfare often lacks a thorough analysis of these concepts. In most papers only short parts of the text deal with theoretical conceptual matters and most of the text deals with applications of the theory. Applications are more often discussed than the theoretical standpoints. A common practice is to present the definition and then continue with its implications. Few texts discuss or question a definition using counterarguments. Also, almost no references to the debate in the field of human health and welfare exist except in certain works of Bernard Rollin (1983), Peter Sandøe (1996), Henrik B. Simonsen (1996), Franklin McMillan (2000; 2005), M. C. Appleby and Peter Sandøe (2002) and Lennart Nordenfelt (2006). Some books exist discussing conceptual matters at length. In total compared to the science of human health and welfare the discussion is sparse.

SCIENTIFIC HISTORY

Let us look at the conceptualisation process in the historical time-line. The most appropriate starting-point is the 1965 Report of the Brambell Committee in the

UK (Brambell 1965). The Brambell Committee came into being as a result of Animal Machines (Harrison 1964), a shocking book opening people's eyes with regard to factory farming and its bad consequences. 16 In the report the term "welfare" was used in a holistic sense with reference to the term "well-being" (Def Welfare 1 below). Also, the Brambell Committee presented Five Freedoms (see the section Welfare, below). The next concept formation step was taken by B. O. Hughes in the 1970s, defining welfare in terms of harmony. This line still exists but is not regarded as having great influence. In 1979 a new version of the Five Freedoms was proposed and the one now in use came in 1994. During the 1980s both welfare as feelings (Marian Stamp Dawkins, see Welfare, below) and welfare as coping (Donald Broom, see Welfare, below) entered the arena. One could claim that welfare as feelings had already entered the arena in 1965, but because of strong behaviouristic influences especially in ethology it was not until the 1980s that science acknowledged feelings as important in animals. In the 1990s two big conferences, in 1993 and 1996, set the stage for defining welfare with several contributions concerning what the concept referred to. Also, during this time conglomerate definitions¹⁷ were suggested. From the middle of the 1990s there were also attempts made to reach a theoretical consensus in the field (Appleby et al. 1996). Ian Duncan and David Fraser suggested what I in this thesis call the Three Broad Approaches¹⁸ (Duncan and Fraser 1997; Fraser et al. 1997), which nowadays are almost canonised in the science of animal health and welfare. Another attempt involved use of the Delphi approach, which is a method where informants contribute anonymously through e-mail to a paper and the result is one form of consensus (Anonymous 2001). In that study leading experts were invited to give their answers and develop the consensus-theory. Feelings and coping were the main lines of thought in that study, which supported earlier suggestions (Appleby et al. 1996; Stafleu and Vorstenbosch 1999). A good concept of welfare at this time needed to be able to be related to a lot of different measures. Much of the discussion hitherto has been in the sub-discipline of farm animal welfare. A shift occurred at the turn of the century from the sub-discipline of farm animal welfare to that of environmental farm animal welfare, introducing other aspects such as inherent worth and dignity. The latter sub-discipline favoured welfare in terms of the nature of animals together with either of the other two broad approaches.

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¹⁶ Several authors have made this point. For an early attempt at history-writing see Ewbank (1993).

¹⁷ A definition is conglomerate if it construes a concept as a combination of properties x, y and z (cf. Nordenfelt 2006, p. 129).

 $^{^{18}}$ I choose to name them throughout the thesis in the same manner as The Five Freedoms and the 3 Rs.

Despite the early use of the term "well-being" with regard to animals, little attention was paid to the concept over the years. In 1989 there was a proposal to bring the concept into the science. During the period 1993-1996 the issue was settled by the reaching of a consensus in the farm animal welfare field that the term "well-being" should not be used. Still, proposals to use the term "well-being" were made as late as 1996. In the field of laboratory animals, on the other hand, a review article series used the term 1997 (Clark et al. 1997a; b; c; d). The concept of psychological well-being has also been introduced, primarily for great apes.

By the time of the Brambell Report the most common definition of health was in terms of production (such as Def Health 9, below). During the late 1960s holistic health definitions emerged, such as health defined as the animal being in harmony with itself and the environment (Lagerlöf et al. 1968). In 1993 J. McGlone (see Health, below) sought to reduce the concept of welfare to only consist of health. Strikingly, the discussion of the concept of health is sparse. A new attempt to discuss the concept of health was made in 2006, when five approaches to definitions were presented (Gunnarsson 2006).

One related concept, Quality of life, has quite recently entered the scene. The term "Quality of life" was present in the debate before the year 2000 but no definition of the concept seems to have been proposed until that year (McMillan 2000). When this concept was introduced the author made clear that he had borrowed it and related terminology from the field of human health and welfare.

Health

Health has not been discussed at length in the science of animal health and welfare. Stefan Gunnarsson notes in a study of the concept of health in veterinary textbooks that even though the concept must be essential to a veterinary surgeon it is nevertheless "uncommon that broader discussions about these basic concepts occur within the veterinary society" (Gunnarsson 2006).

HEALTH AS BIOLOGICAL FUNCTION

First I turn to some definitions with the main focus on biological functioning. Donald Broom and R. D. Kirkden have such a definition of health.

Def Health 1 = an animal's state as regards its attempts to cope with pathology where pathology is a detrimental derangement of molecules, cells, tissues and functions that occur in living organisms in response to injurious agents or deprivations (Broom and Kirkden 2004)

The concept of health concerns in this view only physical health. For Broom and Kirkden veterinary medicine, which they use as a frame of reference, has traditionally dealt with pathology. Pathology has not dealt with behavioural

disorders or mental stressors and therefore they should not be a part of health. Instead, Broom and Kirkden refer mental aspects to "feelings". Health and feelings are parts of Broom's concept of welfare.

M. K. Halverson has developed Broom's concept of welfare (see Welfare, below) into a concept of health. At the time Halverson created a concept of health from Broom's theory of welfare, no clear concept of health had been put forward in Broom's own works.

Def Health 2 = not merely the absence of disease or injury but the presence of robust characteristics, that is, the animal's ability to cope with the environment (Halverson 2001, p. 22)

The definition is close to Broom's own definition of welfare, but Halverson has some developments.

[Health] includes the presence of vigor, defined as 'physical energy or strength, the capacity for natural growth and survival'. (Halverson 2001, p. 273)

Health can also be seen as lack of disease. Halverson maintains that mental health is also important. Both physical and mental health are necessary for well-being. Unfortunately, mental health is not further defined.

McGlone focuses on physiology, normality and disease.

Def Health 3 = freedom from disease and a state of normal physiology (McGlone 1993)

Health can both be physical and mental, but the most important aspect is the mental part.

- 1. Normal mental health is controlled by the brain
- Environmental stress influences the brain. Stress affects many physiological systems as well.
- Imposing a graded increase in stress ... will cause the animal to make adjustments in behaviour and physiology. These adjustments are controlled by the brain.
- 4. When the environment is inadequate to provide for normal physical and mental health, the brain is activated (in a certain manner) and major health problems are found. Health problems may arise in the form of reduced reproduction (infertility) or immune function (pathogenic or malignant disease). (McGlone 1993)

Health is freedom from disease and a state of normal physiology. Both physical and mental health exist but central are the physiological systems. When the animal is in poor health this lowers its reproduction or fitness. Fitness can be given somewhat different definitions but the main view of fitness held by the authors mentioned in this chapter is that it is a measure of how much offspring an individual can produce or how well the individual transfers its genes to future generations. McGlone offers a definition of health in which productivity plays a part (see the discussion on productivity below). Aspinall (1976) follows much the same line as McGlone, even though Aspinall does not define health.

It is extremely difficult to give a definition of health, but in practical terms a healthy animal grows, reproduces, and behaves in a manner which has come to be regarded as normal for its species and type. (Aspinall 1976)

Important aspects are productivity as growth and reproduction, together with a normal behaviour. Normality is in Aspinall's sense statistical normality.

J. K. Baker and W. J. Greer regard ill health as synonymous with disease. Disease is a disturbance in function or a defect in the individual that results in the body being "not at ease" (Baker and Greer 1980). Disease may also been seen as a deviation from normal health, which means that this definition also contains the idea that health is a balance.

Disease may be correctly defined as "not at ease" because the prefix dis denotes reversal or separation from the root ease. Animal ill health is synonomous with the word disease.... They both describe a condition that results from any structural defect or functional impairment of the animal body. Some diseases are not easily detected until they are in the terminal stages; however, most diseases are manifested by signs of disturbances called symptoms. (Baker and Greer 1980)

Health, then, may be defined as being "at ease" and refers to biological function:

Def Health 4 = the animal being at ease without structural defects or functional impairment of the body (adapted from Baker and Greer (1980))

Besides the definition offered by Baker and Greer, there are several definitions of health using the idea of balance or harmony.

Def Health 5 = a state of equilibrium, where the different parts of the body are in harmony and balance with each other and the surrounding environment (Holmstedt and Holmstedt- $\ddot{O}h$ 1985) 19

Def Health 6 = a state where the organs of the body and the organ systems of the body are in harmony with each other and the surrounding environment (Ekesbo 1997, p. 25)²⁰

The definitions offered by Ingvar Ekesbo (Def Health 6) and S. Holmstedt and K. Holmstedt-Öh (Def Health 5) look very much alike. Health in Def Health 5 is interpreted as homeostasis. Health in Def Health 6 is a balance and if the balance is disturbed so that the animals are unadapted, then a disease or a state of disease arises (Lagerlöf et al. 1968; Ekesbo 1997). The crucial difference is that Def Health 5 is interpreted as a homeostasis theory, while in Def Health 6 homeostasis is not the key concept.

The idea of harmony is also referred to in terms of "harmonized interactions". H. C. Löliger (1985) suggests that health in animals occurs when there are "harmonized interactions" between different mechanical and physiological functions. The mechanical functions stem from the animal's own body. Health is defined as depending on the following four aspects:

- normal development of body, organs and organic systems corresponding to the anatomical characteristics of the animal species, to its age and sex
- 2. no restriction in the motility of body and parts of the body
- undisturbed normal physiological functions of organic systems with regard to growing, life-span and reproduction, to their adaptation to changing environmental situations and to the animals overcoming external loading and stress
- 4. reproduction activity and life-span (Löliger 1985)

The term "harmonized interactions" indicates a more holistic view than just physiology, but the four aspects mainly concern physiology.

B. O. Hughes and P. E. Curtis (1997) use lexical definitions to define health.

Def Health 7 = a positive state of 'soundness of body; that condition in which the functions are duly discharged' (Oxford English Dictionary 1973, p. 938), where an

¹⁹ In Swedish: "[Hälsa] kan definieras som ett jämviktstillstånd, där kroppens olika organ fungerar i harmoni och balans med varandra och gentemot yttervärlden."

²⁰ In Swedish: "Med hälsa avses det tillstånd då kroppens organ och organsystem fungerar i harmoni med varandra och omgivningen."

organism is in a 'sound bodily and mental condition' (Chambers Dictionary 1983, p. 577) (Hughes and Curtis 1997)

In this definition there is one element which stems from physiology and another that says that the mental and the somatic area should be sound.

D. C. Henderson (1990) also defines health in terms of soundness of body, but focuses on normal function.

Def Health 8 [good health] = a soundness of body with all the organs, the muscles and the skeleton functioning normally (Henderson 1990)

Disease, on the other hand, is a state of ill health, which implies that some parts of the body are not functioning as they should.... The definition of disease given earlier must include states which would normally be thought of as injury rather than disease. However, a lamb with a fractured leg is diseased, as is one which has been chemically burnt through the use of an inappropriate product, such as neat Lysol applied to an area of flystrike. (Henderson 1990)

The problem of using terms such as "at ease", "harmony" or "soundness" in *definiens* is that they are vague (see Welfare as harmony, below).

A COMMENT ON PRODUCTION AND FITNESS

One aspect that needs a further elaboration is production. Production is mentioned in the definition or the theory behind the definition in several attempts (Def Health 2, Def Health 3, Löliger, above). Also Aspinall (1976) regards production as a key aspect of health. Production could be interpreted in at least four ways, which could have implications in the different definitions.

- 1. Production as increased biomass
- 2. Production as offspring (reproduction)
- 3. Production as goods
- 4. Production as work

In the first sense the process is entirely in the organism itself, while the other three represent production in relation to others. The second sense is a value of the organism's production but will also, if linked to the concept of fitness (see McGlone, above, for a simplified description of the concept of fitness), be linked with forthcoming generations. The third sense is goods for someone else, milk for a calf (an offspring) or a human, meat for a human, fur for a human etc. The fourth sense is for example when an ox ploughs a field. This last term is outside the biological conception of production but still important in this discussion.

Nowadays it is uncommon to claim that health in animals is to be equated with their ability to produce in sense 3 or 4. Still, *Black's Veterinary Dictionary* (West 1992) cites a statement by C. S. G. Grunsell claiming that "health is now more accurately regarded as a state of maximum economic production".

Def Health 9 = a state of maximum economic production

The strongest criticism of this definition is that it is written from a human viewpoint. The health of the animal is seen as what humans may get from the animal.²¹ One can also question systems of maximum production.

The idea that anything good for productivity is usually good for welfare is not acceptable because good production can be obtained in doubtful systems. (Curtis 1996)

Today we know that cows that produce a lot of milk also get diseases due to the high production rate, so-called production diseases. Also, pigs with a lot of meat have problems in the joints because of overweight. A closely related idea is that an animal that produces the most offspring is the healthiest; health is linked to fitness. Unfortunately, this is not a good definition of health for the specific animal, because it defines present health in terms of past or future offspring.

More accepted is the idea that reproduction can be a part of health. Reproduction or productivity can be seen as an indicator that the animal lives well. In zoological parks it is often considered that the fact that some species are reproducing is a sign confirming that these animals have good mental and physical health. Production-related aspects of health indicate that the definition is more or less operational. The production or reproduction rate can be easily measured (as compared with for example happiness) and there is a possibility of expressing the normal range in numbers.

HEALTH AS WELL-BEING

J. Kelly claims that health is a positive concept and that well-being is influenced by the individual animal itself and individuals in its vicinity (Kelly 2000, p. 49).

Def Health 10 = a state of complete physical and social well-being and not merely the absence of disease or infirmity (Kelly 2000, p. 49)

This definition resembles the WHO definition for humans.

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 $^{^{21}}$ Actually, this definition could have been in a separate section labelled Health as providing goods for others.

HEALTH AS ABILITY TO REALISE GOALS

A newly introduced definition from the science of human health and welfare is that of Nordenfelt, who defines health as an ability to realise vital goals.

Def [complete] Health 11 = when the individual A is in a bodily and mental state which is such that A has the second-order ability to realize all his or her vital goals given a set of standard or otherwise reasonable conditions (Nordenfelt 2006, p. 147)

The second-order ability has to be understood as the possibility of achieving a certain goal. For example, if a dog has the goal of running freely, a lead will stand in the way of that goal but not take away the second-order ability to run freely. An inflammation in the hip resulting in lameness, on the other hand, takes away the second-order ability. Vital goals may be understood as basic needs or goals of the highest priority. The subject need not be conscious of these goals. Standard conditions are introduced to adjust for extreme conditions. For example, birds avoid moving from roosting places to feeding places during severe cold. The birds can still be healthy even though their goal of getting food is disturbed by severe circumstances.

CONGLOMERATE DEFINITIONS OF HEALTH

There are also conglomerate definitions within the science of animal health and welfare. In *Baillière's Comprehensive Veterinary Dictionary* health is defined as well-being in combination with productivity.

Def Health 12 = a state of physical and psychological well-being and of productivity including reproduction (Blood and Studdert 1988)

PHYSICAL AND MENTAL HEALTH

Some authors distinguish between physical and mental health, while Broom and Kirkden (2004) reject such a distinction. Besides the definition proposed by Broom and Kirkden, several of the other definitions or the theories behind the definitions contain mental health. The major emphasis has been put on somatic health because of the problem of investigating mental health in animals. One possibility then of avoiding the problem is to argue that if physical health is promoted, mental health will also be promoted (Hughes and Curtis 1997). But the opposite idea is also proposed, namely that promoting mental health promotes physical health (Duncan and Petherick 1991).

Well-being

A few definitions of well-being have been proposed. Two main lines are distinctive: one that totally defines well-being as mental experiences and one that

defines well-being as a wide concept which may contain health, behaviour and positive experiences.

WELL-BEING AS FEELINGS

Def Well-being 1 = the individual's subjective perception of its state – how it feels about its welfare or its state as regards its attempts to cope with the environment (Halverson 2001, p. 21)

The feelings of the animal influence its mental health and potentially its physical health (Halverson 2001).

WELL-BEING AS SOMATIC AND MENTAL STATES

A. F. Fraser proposes a definition of well-being as part of a three-concept usage.

Def Well-being 2 = both physical and psychological. Physical wellbeing is clinical health. Psychological well-being is reflected ... in behavioural well-being (Fraser 1989)

J. D. Clark et al. (1997a) have two ways of defining well-being even though they state that a universally accepted definition is probably impossible because of personal values, views and experiences.

Def Well-being 3 = a complex and dynamic internal state that varies on a continuum and in its manifestations. It implies successful biological function, positive experiences, and freedom from adverse conditions (Clark et al. 1997a)

They add that well-being differs in accordance with both individual differences and changes in the individual. On the individual level changes could occur in "needs, goals, motivations, preferences, and homeostatic circumstances" (Clark et al. 1997a). In an earlier passage ending with another attempt to define well-being, they claim that well-being is multifaceted, and factors that affect it are interactive and interrelated.

Def Well-being 4 = the internal somatic and mental state that is affected by what [the animal] knows (cognition) or perceives, its feelings (affect) and motivational state, and the responses to internal and external stimuli or environments (Clark et al. 1997a)

The difference between Clark et al. and A. F. Fraser is that Fraser defines well-being in terms of biological processes, while Clark et al. also include experiences. Fraser's term "behavioural well-being" could be interpreted as stimulus-response actions where the response is an adequate action in respect of the stimulus. No actual experience need be involved. One could argue that Clark et al. have a more

holistic view, where the mental and the somatic are intertwined, while Fraser has a more divided view, distinguishing physical matters from psychological.

DIFFERENT KINDS OF WELL-BEING

A further elaboration needs to be made regarding different kinds of well-being. As we have seen above, well-being can be divided into different spheres. In the science of human health and welfare several spheres are recognised. The WHO definition of health recognises physical, mental and social well-being (WHO 1948), while T. Evans's definition of wellness (see footnote 27 for a discussion of wellness) recognises spiritual, physical, mental, socioeconomic and cultural wellbeing (Evans 1994). In the field of animal health and welfare physical and social well-being is recognised for animals (Def Health 10; which is identical with the WHO definition). Also, physical and psychological well-being is distinguished in another definition of health (Def Health 12). In the definition of welfare proposed by the Brambell Committee physical and mental well-being are acknowledged (Def Welfare 1, see below). One could argue that the terms "mental well-being" and "psychological well-being" are synonymous (Hetts et al. 2005). I agree with this view with the exception that psychological well-being could be a special term indicating a specified amount of mental capability only applicable to certain species of apes. The difference between physical and psychological well-being is characterised by S. Hetts et al. (2005). Physical well-being encompasses such basic things as hunger, thirst, pain and the provision of shelter, while psychological well-being encompasses more mental things such as happiness, fear, thinking and problem-solving.

I will further discuss the place of well-being in the conceptual framework below (see Relations of the concepts, below).

Welfare

The major discussion within the science of animal health and welfare has been about the concept of welfare. Several definitions of welfare exist as well as the ideas of the Five Freedoms and the 3Rs. I will start with the 3Rs and the Five Freedoms before turning to the proposed definitions.

THE 3Rs

In welfare discussions concerning laboratory animals the term 3Rs is often used. The idea of 3Rs was proposed by W. M. S. Russell & R. L. Burch as early as 1959 to make animal experimentation better for the animals (Russell and Burch 1959). Briefly it means that laboratory research should "either (1) replace the use of laboratory animals altogether, (2) reduce the number of animals used, or (3) refine a procedure so as to diminish the amount and degree of pain, suffering, and stress experienced by the animals" (Rollin 1992). The first two Rs, replace and

reduce, deal with the number of "victims". It is better to use other methods without animals or use methods that use fewer animals. The third R, refine, deals with those animals which still need to be used. When it comes to them, it is of importance to "diminish the amount and degree of pain, suffering, and stress experienced". The 3Rs do not constitute a definition of welfare even though the third R has the ethical claim to minimise pain, suffering and stress. The 3Rs offer good ethical guidance with regard to how to improve welfare for animals in the laboratory environment. I will therefore not discuss the 3Rs further in this thesis.

THE FIVE FREEDOMS

A procedure that has been considered to be theoretically important, is proposing lists of freedoms to be attained by the animals. The first list appeared in the work of the Brambell Committee (Brambell 1965). All the *Five Freedoms* of the Brambell Committee dealt with freedom of movement. The Five Freedoms were followed by the *New Five Freedoms* proposed by the Farm Animal Welfare Council (FAWC) in England in 1979 (Ewbank 1993). The focus on freedom of movement had now been extended to cover more areas of the animal's life. Revisions and new versions have later been proposed by several authors (Carpenter 1980; Webster 1994; Ryder 1998). In its recent form, accepted by FAWC, the *Five Freedoms* state that animals should be ensured:

- Freedom from thirst, hunger and malnutrition by ready access to fresh water and a diet to maintain full health and vigour
- Freedom from discomfort by providing a suitable environment including shelter and a comfortable resting area
- 3. Freedom from pain, injury and disease by prevention or rapid diagnosis and treatment
- Freedom to express normal behaviour by providing sufficient space, proper facilities and company of the animal's own kind
- 5. Freedom from fear and distress by ensuring conditions which avoid mental suffering (Webster 1994, p. 11)

When all the Five Freedoms are attained the animal lives an ideal life (Radford 2001). The Five Freedoms may be seen as offering operational guidance for welfare. John Webster (1994), who has outlined these freedoms in their present form, sees the Five Freedoms as good to have in mind when evaluating the animal's situation. Donald Broom and K. G. Johnson (1993) claim that the Five Freedoms proposed by FAWC are useful as guidelines for measuring welfare. The Five Freedoms are mainly used in the area of farm animals. The Five Freedoms may be seen as basic rights for animals. The wording implies the same as basic

human rights, but the strength of the Five Freedoms as rights has been questioned (Bostock 1993). I will not discuss them further in this thesis. Whether the Five Freedoms are a definition of welfare or not will be left open. At the present time, in the science of animal health and welfare the Five Freedoms are not regarded as a definition of welfare

INTRODUCTION TO DEFINITIONS

The Brambell Committee also proposed a definition of welfare. The definition was at the time extremely modern, setting the boundaries for the concept, recognising mental well-being for animals long before the science of animal health and welfare turned to that kind of research.

Def Welfare 1 = a wide term that embraces both the physical and mental wellbeing of the animal (Brambell 1965, p. 9)

Since then several definitions have been presented from the 1970s and onwards. Nowadays a well-known and well-established view is that all the suggested definitions of welfare in animal welfare science can be arranged in Three Broad Approaches. These are

- 1. welfare as subjective experiences of animals
- 2. welfare as biological functioning of the animal
- 3. welfare as the nature of animals (Duncan and Fraser 1997).

Unfortunately this division, although frequently used, does not consider some other aspects which are present in the scientific debate. For example, none of the Three Broad Approaches defines welfare as related to a suitable environment for the animal or a proper care. Also, conglomerate definitions combining several approaches are hard to fit into one approach. Broom, for example, questions why subjective experiences need to be contrary to biological functioning and states that his definition of welfare not only deals with biological functioning, as Ian Duncan and David Fraser suggest, but also with subjective experiences. ²² In Chapter 5 I will discuss lists of categorisations of welfare definitions.

Though there is no consensus as to which approach is best, the two most common are subjective experiences and biological functioning (Stafleu and Vorstenbosch 1999; Anonymous 2001). Some attempts have been made to reach a consensus concerning the approaches. M. Appleby et al. (1996) proposed a modified version of the Five Freedoms which better distinguishes between aspects of biological functioning and subjective experiences. D. Fraser et al. (1997) have suggested that there are at least three aspects of welfare, and that each approach only recognises one such aspect. Both studies argue that the existing theoretical definitions of

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²² Still I present him in the section on biological functioning and coping.

welfare are too narrow. Judith K. Blackshaw also suggests a wide concept of welfare which will be hard to fit into one approach. Welfare can be seen as comprising two aspects, physical welfare and mental welfare (Blackshaw 1985). Unfortunately she does not provide definitions of these two concepts. She just states that physical welfare involves for example food and water, disease issues and environmental issues, and claims that it is fairly easy to recognise an animal with a lack of physical welfare. For mental welfare it is of importance whether the animal is bored, unhappy, frustrated or frightened. Her main emphasis is on suffering.

WELFARE AS EXPERIENCES OR FEELINGS

The idea of welfare as subjective experiences has proponents such as Henrik B. Simonsen, Marian Stamp Dawkins, Ian Duncan, Peter Sandøe and Lennart Nordenfelt. The differences between the authors have to do with how much consciousness there needs to be involved.

Henrik B. Simonsen claims that a definition of welfare needs to be holistic. He defines welfare in terms of positive and negative experiences.

Def Welfare 2 = consists of the animal's positive and negative experiences. Important negative experiences are pain and frustration and important positive experiences are expressed in play, performance of appetitive behaviour and consummatory acts (Simonsen 1996)

The important experiences are pain, frustration and experiences as a result of play behaviour. To use the definition one needs both objective information about the animal and a subjective valuation of the animal's situation. The reference for welfare is the normal animal (Simonsen 1996). Simonsen argues that there are no needs that are more important than others (see Dawkins, below, for an opposite view).

When we postulate that some needs are more important than others, it may be nothing more than a pragmatic compromise in our efforts to draw the line between the kinds of deprivation we judge to be more or less acceptable. (Simonsen 1996)

Marian Stamp Dawkins, on the other hand, defines good welfare as absence of suffering (Dawkins 1983). Dawkins claims that suffering occurs when certain proximate ethological needs are unmet. If an ultimate need is unfulfilled the animal dies. If a proximate need is unfulfilled the animal might suffer, but it does not die. In nature, these two kinds of needs are often linked to each other, so that a migrating bird, for example, has a proximate need to migrate before conditions are so harsh that the ultimate needs are unfulfilled. In captivity these different needs

can be distinguished. A migrating bird in a cage has no ultimate need to migrate in autumn, but its hormone system tells it that it has a proximate need.

The best way to recognise which proximate needs cause suffering or not is with regard to Dawkins's theory to use "consumer demand theory", which has its roots in economic theory. Consumer demand theory is based on three assumptions. The first assumption is that the animal has a lot of needs to fulfil. The second assumption is that the animal's resources are limited in different respects. One limitation is time. The third assumption is that the animal tries to maximise its choices with regard to its basic wishes, for example its wish for happiness. If the resources available to the animal decrease, for example when the days get shorter, the animal will change its behaviour. The behaviour that it will exhibit to approximately the same extent may be regarded as more important or necessary. The behaviour that it ceases to exhibit or that it exhibits to a smaller extent may be regarded as a "luxury" and unnecessary.

Greylag geese can serve as an example of the difference between necessary and unnecessary behaviour. In the early autumn greylag geese in southern Sweden often have two feeding periods a day on the fields, with a period on a lake in the middle of the day. During the lake visit they bathe, preen and sleep. In the night the geese rest on the lake. When the days get shorter the rest in the middle of the day disappears and the geese feed all day on the fields, only using the lake for night sleep. The period of preening, bathing and resting on the lake during the day is an unnecessary behaviour.

The necessary behaviour is the behaviour that the animal has the strongest proximate need for. By testing different needs in controlled laboratory experiments with the ability to grade the needs, it is possible to rank these needs. Those needs which get the highest rank for the animals in the tests are those that cause the most suffering when unmet. Nothing in the theory equates human suffering with animal suffering. If one accepts that humans suffer when their needs are unmet, one also needs to accept that animals suffer when their needs are unmet. The necessary needs are not always those that the animal spends most of the time on. Necessary needs could occur only momentarily. The theory says nothing about the animal's ability to decide about what is best for it in the long run.

Ian Duncan limits his definition of welfare to the area of subjective experiences. He claims that welfare only concerns the animal's wishes or feelings (Duncan and Petherick 1991; Duncan 1996).

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²³ In economic theory a necessity has the term "inelastic" and a luxury has the term "elastic".

Def Welfare 3 = is all to do with wants (Duncan and Petherick 1991)

To be ill, to be in a state of stress or to have a low level of fitness is not the same as having bad welfare (Duncan 1993). Through the process of domestication animals may have been selected and bred so that there is a gap between their fitness and their experiences or feelings. They may have a high level of fitness and produce a lot of offspring, but still have bad welfare. Mental experiences are important owing to the fact that it is often enough to meet the mental needs to safeguard the physical needs (Duncan and Petherick 1991).

To consider something a feeling it is not enough that impulses reach the brain.

A 'feeling' is a specific activity in a sensory system of which an animal is aware. (Duncan 1996)

To support the theory, Duncan relates it to the term "ill". If an animal is ill, it often feels ill. If it doesn't feel ill the disease doesn't need to affect welfare. Ian Duncan and J. C. Petherick (1991) claim that from this follows that health is not a prerequisite for good welfare, even though health is one of the most important needs

Because welfare can only be ascribed to animals capable of feeling, Duncan assumes that it is possible to test whether something is welfare through the pine tree argument. The argument tells us how to distinguish what phenomena welfare involves.

This is a method of testing a candidate phenomenon suspected of being "welfare" by questioning whether or not it can be applied sensibly to pine trees....

- 1) the term "welfare" can only be applied to sentient animals
- 2) "X" can be applied sensibly to pine trees
- 3) pine trees are not sentient
- 4) therefore "X" is not welfare (Duncan 1993)

By this method Duncan shows that welfare cannot refer to health, lack of stress or fitness, because these concepts are also applicable to plants. But the argument has a shortcoming. There is no possible way to say what welfare is. To show that "X" can by no means be applied sensibly to pine trees is not the same as saying that "X" is welfare (the pine-tree argument is a deduction, to say that "X" is welfare is an induction). Duncan seems to be sure that feelings are welfare, but he cannot use only this argument to show it. There is always a possibility of finding something else than feelings that also is applicable only to animals and not to pine trees.

Duncan claims that there is a difference between being in a state (biological function) and feeling that one is in a state (experience). He (Duncan 1996) uses an illustration. Imagine two layers. One is "to be stressed" and the other is "to feel stressed". The layer "to feel stressed" is above the other layer. Between the layers there are connecting arrows pointing in both directions, which means that a section in one layer may influence another section in the other layer and vice versa. Despite the connected areas there are areas which do not connect to the other layer. Besides this, both a positive side and a negative side constitute the layer "to feel stressed", so that experiences can be positive and/or negative. If a definition of welfare focuses on biological functions there may be problems if one also is interested in the feelings of the animal. The area in the "to be stressed" layer may lack a corresponding area in the "to feel stressed" layer. Also, when one measures the "to be stressed" layer one is unsure if the corresponding site in the "to feel stressed" layer is positive or negative (Duncan 1993).

Duncan also claims that society's view of welfare is in line with his own view of welfare (Duncan 1996). He claims that it is generally accepted that the ability to feel is necessary for welfare (Duncan 1993). Duncan refers here to the "commonsense" definition of welfare among laypersons and a "common sense" among researchers regarding the importance of experiences. The last claim can be questioned. In the references for common sense he only names researchers using the same approach.

Peter Sandøe (1996) and Nordenfelt suggest definitions applicable to both animals and humans. The basis for these definitions is preference satisfaction. I here quote Sandøe:

Def Welfare 4 = a subject's welfare at a given point in time (t1) is relative to the degree of agreement between what he/it at t1 prefers (is motivated to do, wants, aspires after, hopes for, does not try to avoid, or is not indifferent to getting) and how he/it at t1 sees his/its situation (past, present and future) – the better agreement the greater welfare (Sandøe 1996)

In this definition a human or an animal must have the ability to evaluate her/his/its situation in relation to a hypothetical situation. Also the individual needs to have a memory and also, in some way, to be able to have wants. A similar way of thinking, but somewhat different, is to be seen in the work of P. R. Wiepkema (Wiepkema 1987; Wiepkema et al. 1993). Wiepkema has a model where the animal is able to evaluate its state of living at a moment in time ("ist-wert") and compare it to a state that it strives for ("soll-wert").

All the definitions concerning experiences or feelings need to clarify what mental capacities are needed in animals. Simonsen seems to be demanding less capacity than the others. Pain and frustration need less than suffering. Dawkins's definition requires more. The animal suffers owing to frustration when a need is unfulfilled. To have welfare in Duncan's sense the animal needs to be aware and have the ability to have feelings and wishes. That is a somewhat stronger claim than Dawkins's. In Sandøe's case even more is required. The animal needs to be able to evaluate wishes in relation to goals and in a way get outside the situation to evaluate it properly.

A strong criticism of these kinds of definitions involves denying that animals have feelings or wishes. Such criticism may be based on different ethical and/or biological arguments (Bermond 1997). An extreme version of this is behaviourism, which in its strongest sense even denies feelings in humans. A way of analysing whether the animal has feelings is by "the analogy-conclusion of mankind" (Sambraus 1998):

- 1) Man has sensations. He feels pain, hunger and thirst, and knows fear and nausea.
- 2) Such sensations are accompanied by objectively observable accompanying phenomena. They can be the cause of the sensation, for example an injury when in pain or an intensive search for food when hungry. In some cases physiological changes are demonstrable, like a low level of sugar in the blood or high levels of adrenalin.
- 3) Deviations from the morphological, physiological and ethological norm are also known with animals. Furthermore it can be proved that these distortions appear in distinct situations.
- 4) Thus one can assume the presence of sensations. It is a conclusion in which man plays a leading role. (Sambraus 1998)

This conclusion of analogy does not differ much from the conclusion of analogy we draw when we try to understand if a human friend is in pain or not (if we are unable to ask her or him). The problem is that different animals show pain in different ways. Observations of behaviour and the constitution of the nervous system and its functions do not give all the information that one needs to be certain about the amount of pain. Still, I adopt H. H. Sambraus's standpoint.

Sandøe's definition demands the highest cognitive level. Many animals have functions of memory and it is possible to claim that some animals can forecast the future (a dog chasing a hare can guess where the hare will move in the next seconds). But it is harder to claim that animals can compare a situation right now with a previous situation or a situation right now with a forthcoming situation and

in both these cases draw conclusions as to which situation is the best.²⁴ Preference studies are assumed to answer these kinds of questions, but the assumptions involved have been criticised.

Another criticism concerns states of sleep and states reached by means of drugs. In Duncan's theory, it is impossible to say anything about the welfare of a sleeping animal. Broom claims that there is a flaw here. An animal in a bad environment has bad welfare when it is awake. The bad environment does not disappear when the animal is sleeping, but we are unable to say anything about the welfare. When the animal wakes up again it is again possible to say that its welfare is bad. Why is it impossible to say that the welfare is bad even in the sleeping animal? Nothing crucial has been changed. Nordenfelt (2006) meets this objection by showing that a feelings-based theory of welfare is possible if we accept that there are dispositions for feelings. One could say that the animal has a disposition for happiness or depression even when it is sleeping. If the animal wakes up it is still feeling the same feeling as when it was awake last time. Using dispositions for feelings allows for welfare's being bad or good even during sleep.

A third criticism concerns drugs to improve welfare (Lund and Röcklinsberg 2001). A relevant biological example is stereotypies, movements that the animal continues to make such as weaving in horses or polar bears during severe stress. When stereotypies have evolved they often function as narcotics, helping the animal feel something positive even in a very stressful environment. The animal will be able to avoid suffering even if the welfare is bad (Broom 1988). The answer from Duncan is that in the short term this criticism is forceful, but if the period of observation is longer, then there will be a certain amount of suffering and a reduced welfare (Duncan 1996).

A somewhat similar criticism concerns weak bones in hens. If the leg of a hen will break because of the small amount of calcium in the bone, then there is an amount of suffering. The hen probably has no suffering before the leg is actually broken, but one would maybe still say that the lowering of the calcium level in the leg is a lowering of the welfare level. H. W. Gonyou (1996) defends this position, saying that the low calcium level is a potential risk and therefore it should be given attention. The operational definition may have these kinds of measures even if the theoretical definition doesn't imply them. Unfortunately, no information is given on how to reach the operational definition from the theoretical definition.

WELFARE AS DEVELOPMENT ACCORDING TO NATURAL SELECTION

C. J. Barnard and J. L Hurst (1996) claim that welfare needs to be understood as

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²⁴ See also Bekoff (2002).

... what natural selection has designed an organism to do and how circumstances impinge on its functional design. (Barnard and Hurst 1996)

Central to an individual's design is the capability of maximising reproductive success.

The organism's priority is to maximize reproductive success through efficient self-expenditure. (Barnard and Hurst 1996)

This statement could be rewritten into a definition of welfare.

Def Welfare 5 = maximizing reproductive success through sufficient self-expenditure

This definition could also be called *Welfare as fitness*. Observe that my criticism above of health defined in terms of production or reproduction also concerns these definitions of welfare.

WELFARE AS FULFILMENT OF NEEDS

In the science of animal health and welfare, welfare may be defined as fulfilment of needs

Def Welfare 6 = the fulfilment of needs

But what are needs and where should they be placed; are they biological functioning, wants or something else? For S. E. Curtis three levels of needs are evident:

- 1. Physiological needs
- 2. Safety needs
- 3. Behavioural needs (Curtis 1987)

Dawkins on the other hand distinguishes between ultimate and proximate needs (see Welfare as experiences or feelings).

One promising analysis of what needs are is made by Nordenfelt. A need is a relational term, a four-place predicate where one can distinguish between the subject of the need, the object of the need, the situation of the need and the goal of the need (Nordenfelt 2006, pp. 107-108). If a need has to have a goal, then one could ask if welfare should be defined in terms of needs or in terms of the goals of needs. The goals of needs differ between authors. In Curtis's view death, frustration and distorted behaviour occur if needs are not fulfilled. The opposite of these three states could be seen as goals of the needs.

If one analyses needs in the way Nordenfelt does it turns out that the need category can be reduced to other categories. The negative states mentioned in

Curtis's view could be interpreted as problems in coping. In Dawkins's view suffering occur, if needs are not fulfilled, and that is the reason why her theory of needs is placed among the definitions of *Welfare as experiences or feelings*. Adopting Nordenfelt's claim for a goal of each need implies that this category is not a true category of welfare. If, on the other hand, different levels in the hierarchy of needs refer to different goals, then *Welfare as fulfilment of needs* is a conglomerate definition.

WELFARE AS COPING OR BIOLOGICAL FUNCTION

Broom defines welfare as ability to cope with the environment.

Def Welfare 7 = the individual's state as regards its attempts to cope with its environment (Broom 1986)

The part "state as regards its attempts to cope" concerns both how much the animal must work to handle its environment and how well or badly it manages this task (Broom 1991; Broom and Johnson 1993). "Coping" is having control over bodily and mental stability (Broom and Johnson 1993). If the animal fails to maintain control over its mental and bodily stability, the consequences for the animal will be harsh. It may end up with death for the animal. Broom and Johnson claim that fitness is a good term to measure the consequences. Fitness as the number of offspring an animal produces is measurable. Each time the animal fails to cope or when it has a difficult time coping, it has bad welfare. This holds without regarding the aspect of time and whether it has any influence on fitness. An animal that gets back to normal homeostasis has full (good) welfare (Broom and Johnson 1993).²⁵

Nordenfelt finds three possible interpretations in his thorough analysis of Broom's concept.

- An animal's welfare is the state that enables it to cope (or disables it from coping ...) with the environment in order to maintain biological fitness.
- An animal's welfare is the more or less successful or unsuccessful result (or rather: the continuous results) of its coping attempts.
- 3. An animal's welfare is its process of coping with the environment. (Nordenfelt 2006, pp. 58-59)

²⁵ In an essay where I have compared Broom's theory with definitions within the science of human health and welfare, I suggest an interpretation of Broom's definition of welfare in terms of balance (Lerner 2006).

The first interpretation is less plausible. Moreover, Broom has in personal communication rejected it (Nordenfelt 2006). The other two interpretations, on the other hand, are plausible. This means that the definition is ambiguous, where coping can be seen as either the process or the result of the process. Broom's claim from 1991 that coping deals both with how much effort the animal needs to invest and with the result of the process in terms of how well it manages the task (Broom 1991) suggests that both the second and the third interpretation are present in the definition of welfare.

Broom claims that there is no need for the theoretical definition of welfare to be in terms of needs or freedoms, even though these may be important for the animal. Broom points out that suffering is a very valuable tool to evaluate whether bad welfare is present, although suffering is only a part of welfare. In some cases welfare may be bad even without suffering.

The goal of a definition of welfare is to make it possible to evaluate how certain handlings of animals, special occasions etc. affect the animals. It is therefore important whether the concept can be transformed into operational definitions so that welfare can be measured (Broom 1996). Therefore welfare needs to be something else than just present or absent. Welfare needs to be a continuum from bad to good. Welfare is not a fixed level to reach. Because Broom's theoretical definition may be applied to all animals, it is of importance to adjust the operational definitions to each sort of animal. Different animals can have different strategies to cope with their environment (Fraser and Broom 1997).

The most promising and forceful criticism of Broom's definition is put forward by Simonsen (1996). Even when the animal can cope with its environment there is no guarantee that it has pleasant feelings. To look at welfare as response to different stressors means that welfare is negatively defined. Simonsen claims that welfare also embraces positive elements.

It certainly also includes experience of positive events like play, appetitive behaviour and fulfilment of expectations. (Simonsen 1996)

In Broom's definition the highest level of welfare is reached when the animal has control over its environment. Other states above sheer control, like extraordinary feelings of happiness or freedom, do not contribute to an even better welfare.

Gonyou (1993) claims that welfare should not be understood as only avoiding a pre-pathological state, which occurs when the animal has trouble in coping with its environment. The coping processes are indeed important, but the animal is often affected mentally even before the pre-pathological state. This lowers the level of welfare.

Some would argue that an animal reaches a point of poor welfare only when it enters a pre-pathological or pathological state.... The animal's perception of the environment was likely affected before it made the initial behavioural changes. (Gonyou 1993)

WELFARE AS NATURAL BEHAVIOUR

Rollin defines welfare in the following statements.

However many divergent definitions of animal welfare one may encounter in the literature, surely all would consider the health of the animal to be an essential part of welfare, and disease to be evidence against the presence of welfare... (Rollin 1993; Rollin 1996)

Not only will welfare mean control of pain and suffering, it will also entail nurturing and fulfilment of the animals' nature, what I call *telos*. (Rollin 1993; Rollin 1996)

For Rollin health is an important part as well as control of pain and suffering. Besides these two common aspects Rollin claims that the concept of welfare also needs to include that the animal fulfils its nature, or *telos* (indicating an Aristotelian tradition). Rollin also uses the example "pigness" of a pig, "dogness" of a dog to explain *telos*. This means that he connects the idea of *telos* to species. Also he sometimes uses the term species-specific.

Suffering and happiness are crucial concepts in Rollin's theory. Suffering occurs when basic urges, needs or interests are unsatisfied. The concept of happiness is the best theoretical notion as the endpoint or goal (Rollin 1989). Rollin claims that his theory is in accordance both with "common sense" and scientific knowledge. A thorough analysis of Bernard Rollin's ideas indicates a more experience-based approach as the final endpoint for welfare rather than the expected natural behaviour-based approach.

Rollin's ideas have been used in two kinds of conglomerate definitions and these are based on early works of his. The first is that set forth by David Fraser, claiming that all the three approaches that Duncan and Fraser (1997) recognise (where *telos* or leading a natural life is one) are parts of the concept of welfare (see Conglomerate definitions of welfare, below). The second approach is evident in the area of organic farming where natural living is baseline in a concept of welfare and other aspects are added (see Conglomerate definitions of welfare, below). Another concept referring to nature is natural behaviour, but natural behaviour is not recognised as a full definition of welfare. In Chapter 8 I will further develop and discuss Rollin's theory, the concepts of natural and normal (as in natural behaviour) and the relation between Rollin's theory and other theories.

WELFARE AS HARMONY

Hughes (1976) claims that the concept of welfare must be defined in other terms than those used for measuring welfare. Hughes' definition is

Def Welfare 8 = a state of complete mental and physical health, where the animal is in harmony with its environment (Hughes 1976)

A way of measuring welfare is then to compare an animal in a certain environment with an animal in an ideal environment to see how much the difference is. Hughes has not elaborated his welfare definition much more than I have presented here. For an animal to have good welfare, the animal needs to have full physical and mental health. The addition "in harmony with its environment" may be interpreted in several ways. First, Hughes is maybe only reducing the number of possible terms and the subordinate clause in the definition only indicates which concept of health Hughes chooses. Welfare only comprises health and the complete health is when the animal is in harmony with its environment (as for example in Def Health 5 or Def Health 6). Hughes has claimed (Hughes and Curtis 1997) that health should be understood as Def Health 7, which means that this first interpretation is untrue. The next three interpretations all occur if the subordinate clause is seen as a second condition for welfare. Besides having complete mental and physical health, the animal must be in harmony with the environment. Then, health is still undefined and as long as the definiens of health avoids the term "harmony" any solution is possible. The second interpretation is that harmony is some sort of subjective experiences (see Welfare as experiences or feelings, above). The third interpretation is that the animal successfully handles its surroundings (coping with its environment; see Welfare as coping or biological function, above). The fourth interpretation is that the animal is doing well in the interactions with other animals at the farm and the humans that take care of it (see Welfare as suitable environment and care, below).

Halverson (2001) has interpreted Hughes' definition as the ideal level of welfare when welfare is defined in terms of coping. Halverson uses Broom's definition of welfare as the definition of welfare. If the animal has complete mental and physical health and is in harmony with its environment it is successfully coping and has the highest level of welfare in Broom's sense. Hughes regards his definition as a full definition of welfare and not dependent on any other definition (Hughes 1989). Even though this definition of welfare is vague and one of the first in the science (and therefore may be abandoned in favour of more suitable new ones), the definition is still used at the present day (see for example Désiré et al. (2002)).

WELFARE AS SUITABLE ENVIRONMENT AND CARE

There are suggestions of a definition of welfare in terms of human interactions with the animal or in terms of the human use of the animal. With regard to *Baillière's Comprehensive Veterinary Dictionary*,

Def Welfare 9 [animal welfare] = the avoidance of exploitation of animals by man by maintaining appropriate standards of accommodation, feeding and general care, the prevention and treatment of disease and the assurance of freedom from harassment, and unnecessary discomfort and pain (Blood and Studdert 1988)

Def Welfare 10 [welfare of animals] = the continous surveillance of the environment that human beings provide for animals that are in their care, and the promotion of what are considered from time to time by the community to be adequate rewards to the animals for the contribution that they make to the physical and psychological well-being of man (Blood and Studdert 1988)

These definitions focus on how humans arrange the animal's environment and the care of the animal in that environment. This category of definitions could be called *Welfare as suitable environment and care*. A more narrow definition only using the feelings of the animal is given in the glossary of the *Animal Welfare Issues Compendium*.

Def Welfare 11 = using animals for human ends but minimizing pain, stress, suffering, and deprivation and enhancing the animals' well-being during their lifetimes (Reynnells and Eastwood 1997, p. 13)

These definitions indicate what kind of research is being done within the field of animal welfare. A criticism of such definitions is that it is odd to define a concept relating to a state or feeling of the animal in words that relate rather to what is outside of the animal (Broom and Johnson 1993 (see Welfare as coping or biological function, above); Gonyou 1993 (see Welfare as experiences or feelings, above)). A way of avoiding this criticism is to have more than one concept, for example welfare and well-being. One concept may then have one of the abovementioned definitions with a focus on what humans provide and the other concept may have its focus on animals (see Relations of the concepts, below).

CONGLOMERATE DEFINITIONS OF WELFARE

John Webster claims that welfare should not refer only to a certain mental state at a particular point in life. One needs to take into account how this state affects the individual's future. Therefore welfare needs to include physical and mental fitness.

Def Welfare 12 = the capacity of the animal to avoid suffering and sustain fitness (Webster 1994, p. 11)

One could say that Webster's definition combines biological functioning with feelings or experiences.

David Fraser wants the concept of welfare to be based on important values. Two choices of values have been made and they are somewhat similar to each other. The first outlines that a high level of welfare implies (1) freedom from suffering, (2) a high level of biological functioning and (3) positive experiences (Fraser 1995). In the other proposal, put forward by Fraser together with other researchers some years later, a high level of welfare implies (1) that the animal leads a natural life, (2) that it should feel well and be free from prolonged negative states, and (3) that it should function well in terms of physiology and behavioural systems (Fraser et al. 1997). The latter is more embracing by combining (1) and (3) from 1995 and adding natural life then using all the Three Broad Approaches to definitions of welfare.

Proponents of ecological farming claim that none of the Three Broad Approaches is optimal when defining welfare. Mette Vaarst et al. (2001) claim that the proposed meanings only deal with biological matters. They ask for a *definiens* which also comprises cultural aspects. Helena Röcklinsberg and Vonne Lund (2000) want to see a clearer connection between welfare and the concepts of inherent value and dignity. Even if integrity and dignity are introduced in the discussion it seems to these authors that the concepts of integrity and dignity are related to the concept of welfare and not a part of welfare. Also Lund and Röcklinsberg (2001) favour that these two concepts connect to the species level rather than the individual level (see The concepts at other levels than the individual level, below).

For these proponents of ecological farming, Rollin's attempt to define welfare is the best starting-point (Alrøe et al. 2001; Lund and Röcklinsberg 2001; Vaarst et al. 2001). One reformulation of Rollin's concept of welfare states that

the animal should *lead a natural life* through the development and exercise of its natural adaptation, corresponding to the concept of the "innate nature" of the animal. (Alrøe et al. 2001)

Hugo Fjelsted Alrøe et al. (2001) suggest that a combination of Rollin's view with Fraser's proposal of a more encompassing definition of welfare, taking account of all the three main aspects, will be fruitful. They claim that a *definiens* combining the nature of animals with experiences or feelings is the best solution. Alrøe et al.

(2001) also suggest that the distinction between the innate genetic nature and the integrity of the animal is important. The integrity may be damaged by gene modification. The distinction is therefore between the innate genetic nature of the animal and the kind of nature given by its integrity.

But is the criticism from the proponents of ecological farming valid? Consider for example Broom's and Duncan's theories, both of which may be said to take into account cultural aspects. Caretakers treating animals well cause the animals less stress than caretakers treating them badly. A lower level of stress is easier for the animal to handle than a higher. Animals living in a poor cultural environment often have more negative experiences or fewer experiences than animals in a rich cultural environment. An isolated animal often feels bad. The isolation from conspecifics influences the feelings of an animal as well as its biological function. In Chapter 8 about the concepts of natural and nature I will add another criticism to the effect that they understand Rollin's ideas wrongly.

Closely related concepts

QUALITY OF LIFE

"Quality of life", which is a well-used term in the science of human health and welfare, has also entered into the science of animal health and welfare. The first step in this direction was made by Simonsen in 1996. In stipulating the concept of "animal life quality", which may be said to be in line with "quality-adjusted life years" in the science of human health and welfare, he says that animal life quality is the time-factor in combination with the positive and negative experiences of an animal. The positive and negative experiences are the *definiens* of welfare for Simonsen (1996). This is a definition that may serve to handle the criticism put forward of definitions only focusing on mental experiences (see Welfare as experiences or feelings, above). A detoriation in the skeleton doesn't need to be a lowering of the welfare level, but it will be a lowering of the well-being level.

McMillan stated in 2000 in a literature survey that

current usage of QOL [quality of life] in veterinary medicine can be summarized as follows: the term QOL is being used but not defined; authors typically assume that individuals assessing QOL know what is meant and leave evaluators to define the term in their own ways; ... QOL is equated to health status, so that assessments of QOL are assessments of health status. (McMillan 2000)

Besides the closeness to health, McMillan sees quality of life as closely related or equivalent to well-being and welfare. McMillan attempts to define quality of life.

Quality of life is a multidimensional, experiential continuum. It comprises an array of affective states, broadly classifiable as comfort-discomfort and pleasure states. In general, the greater the pleasant and lesser the unpleasant affects, the higher the QOL. Quality of life is a uniquely individual experience and should be measured from the perspective of the individual. (McMillan 2000)

In a later paper the definition has evolved into:

Quality of life is the affective and cognitive (to the degree that the animal can form such a cognitive construct) assessment that an animal makes of its life overall, of how its life is faring, experienced on a continuum of good to bad. This assessment is derived from the balance between the various pleasant and unpleasant affects experienced by the animal at and recently preceding the QOL assessment. In general, the further the affect balance tips toward the pleasant side, the higher the QOL. The contributory weights of the specific affects vary between individuals and are determined by the psychological impact of the affects to that individual. (McMillan 2005)

Quality of life only applies to those animals that are able to have conscious subjective mental experience (McMillan 2005), which means that few species in the animal kingdom fit into this concept. The concept is wider than health and contains all the feelings about the life as it goes on. McMillan sees the concept as theoretical (and analogous to well-being or welfare) but also quite easy to transform into measuring. One can talk about maximising quality of life (McMillan 2005). The first question is if his definition of quality of life is to be regarded as an operational definition or a theoretical one. ²⁶ The definition above from 2005 is a theoretical definition and not an operational one. The second question is if McMillan actually presents a new and better term than "welfare" or "well-being" or if quality of life rather should be a term subordinate to the term "welfare" or "well-being". Right now I consider the term to be subordinate to or synonymous with the term "welfare" or "well-being" but I will return to this question in Chapter 9 in the light of what is discussed in Chapters 6 and 7. ²⁷

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²⁶ One criticism of the concept of quality of life in the science of human health and welfare is that the concept lacks a theoretical foundation and mostly is based on several theoretical definitions.

²⁷ McMillan has also proposed that the concept of wellness could be used, but wellness is in McMillan's usage a term for promoting health and well-being (McMillan 2002). Discussing concepts for promoting health or well-being is outside the scope of this thesis. Still the usage of the term within the science of animal health and welfare is worth noting. In the science of human health and welfare this term sometimes has a connotation of well-being, as for example in Evans's

Role or species approach?

Seven of the definitions of health presented in this chapter seem to apply to all animals (Def Health 1, Def Health 2, Def Health 3, Def Health 4, Def Health 5, Def Health 6, Def Health 8), whereas only one definition of welfare seems to apply to all animals (Def Welfare 7). Aspects concerning the belonging to a certain species were evident in three definitions of health (Def Health 7, Def Health 10, Def Health 12), whereas belonging to a certain role only occurred only once (Def Health 9). When it comes to well-being, one definition was made with reference to species characteristics (Def Well-being 5). For six of the twelve definitions of welfare, the belonging to certain groups of species was important (Def Welfare 1, Def Welfare 2, Def Welfare 3, Def Welfare 4, Def Welfare 8, Def Welfare 12). The belonging to certain roles was evident in one definition (Def Welfare 10). A combination of role and species was evident in two definitions (Def Welfare 9 and Def Welfare 11). In all the cases where the species was relevant, the central aspect was mental well-being or mental health. In all the cases where the role was relevant it was the wide role of animals in human care that mattered.

Relations between the concepts

In this section I will discuss the relations between the three concepts. First a short comment on the relation between health and welfare. Then I will discuss arguments that use only one or two of the concepts. Finally I will turn to views that use all three concepts.

HEALTH AND WELFARE

Some argue that *health* is a prerequisite for *welfare*,

Health is the first step to welfare. (Curtis 1996)

whereas others dispute this,

So, health, which is surely the most obvious of the physical needs, is not necessarily a prerequisite for welfare. (Duncan and Petherick 1991)

Health can also be seen as a part of welfare (see quotation below and the section on Broom in Health as biological function). Then welfare is an overarching concept.²⁸

definition of wellness where wellness is defined as spiritual, physical, mental, socioeconomic and cultural well-being (Evans 1994).

²⁸ There are other examples of overarching concepts. Mörner uses condition as the important concept. The condition is divided into the animal's physical health and mental well-being (Mörner 1992). Condition is a concept not discussed in this thesis. According to the interviews condition may be defined in two ways: (1) as performance, capacity or stamina; (2) in relation to health. The

I believe it is not sufficiently understood by those interested in animal welfare that good health may be the most vital factor of all. (Sainsbury 1986)

HEALTH DEFINED AS WELL-BEING

Some definitions see health in terms of well-being (Def Health 10, Def Health 12). I will not avoid these as long as some other criteria are added in the definition (as in Def Health 12). If health is only defined as well-being one could ask why not only define well-being and consider the terms health and well-being as synonyms. There is a possibility of only defining well-being in the case of Def Health 10. Instead of introducing the concept of health (which is complete physical and social well-being) one could say that the ideal level of well-being is complete physical and social well-being.

WELFARE REDUCED TO HEALTH

One approach is to reduce welfare into animal health or say that the terms "welfare" and "health" are synonymous²⁹ in the field of animal health and welfare. McGlone (1993) starts his analysis of the concept of welfare by referring to the definition in Webster's dictionary and the American way of using welfare in discussions about humans. In the dictionary, welfare is a "state of health, happiness and prosperity". McGlone questions this for animals and states that animals lack the possibility of prospering and humans lack the understanding of how to ensure happiness in animals. The debate about welfare in animals reaches too far when humans also should safeguard their happiness. In America safeguarding happiness is never done in human welfare programmes. Then, only health remains, in McGlone's case defined as in Def Health 3. Interestingly, this is an argument based on a species consideration. Human welfare is wider than health primarily based on species differences, while animal welfare is health.

Both the arguments proposed by McGlone are doubtful. First, an animal that has a great fitness, grows well and produces a lot of offspring could be said to prosper according to a theory of biological fitness. Second, we are learning more and more about how to stimulate animals to enjoy a rich mental life and the whole area of enrichment research³⁰ could be seen as working with the aim of

second interpretation may further be divided into two meanings: (2a) condition as health; (2b) condition as something wider than health.

²⁹ Mentioned as a possibility in Hughes and Curtis (1997). Note that Def Welfare 8 would end in this category if it were interpreted in its first sense (see Welfare as harmony, above).

³⁰ One talks about enrichments for animals when humans add things to the animal's environment that stimulate the animal (for example to search for food) or make the environment more natural.

safeguarding animals' happiness. Therefore I dismiss McGlone's suggestion that only health should be used.

HEALTH AND WELL-BEING INSTEAD OF WELFARE

R. Ewbank (1987) argues for two concepts. Welfare has indeed been defined in many ways, but the definitions are hard to put into practice. Therefore welfare should be abandoned in favour of the concepts of health and well-being. Both terms should be defined positively: health should be regarded as something else than absence of disease and well-being as something else than absence of suffering. The problem with Ewbank's suggestion is that nothing gets resolved more than reducing a possible three-term usage to a two-term usage. As we have seen, to define health or well-being is as hard as defining welfare. Ewbank's argument that definitions of health or well-being are easier to put into practice must be questioned.

AVOIDING WELL-BEING IN FAVOUR OF WELFARE

A strong line claims that well-being should be avoided in the science of animal health and welfare. Broom advocates only a use of two concepts, welfare and health. The reason not to use well-being is twofold. One reason to avoid a distinction between welfare and well-being is based on their semantic roots. The two words have closely related definitions in most languages (Broom 1993; Broom and Johnson 1993). The meaning of "welfare" can be interpreted as "how well the individual fares in life", while the interpretation of "well-being" more is "how well the individual is" (Broom 1996). Broom claims that "welfare" is used when referring to European law (Broom 1993; Broom and Johnson 1993) and in science because it is regarded as more precise than "well-being" (Broom 1996). Despite the fact that the two words are used as synonyms, there may be a slightly different connotation. The word "well-being" may be used for how the individual perceives its state rather than the individual's state in itself (Broom 1993).

Well-being can be used to mean the feelings which an individual has about both its environment and the consequences of interactions with it. (Broom 1993)

But he also believes that "feelings" is a more proper term than "well-being". Welfare is the important, overarching concept and concepts such as health and feelings are part of this concept. Welfare is more than these two concepts together (Broom and Kirkden 2004). It is important for Broom to explain the concept of welfare in relation to other important concepts in veterinary medicine.

We have to define welfare in such a way that it can be readily related to other concepts such as: ... coping, ... feelings, suffering, ... stress and health. (Broom 1996)

Broom sees that there are many concepts that are related to welfare and that welfare is the paramount concept. Still there is no contradiction, as we will see, between Broom and advocates of a three-concept world. Broom's use of feelings is close to a use of well-being even though he avoids well-being as a scientific concept. But it is still possible to treat well-being as being a question of feelings.

RELATIONS BETWEEN WELFARE AND WELL-BEING

When a concept of well-being has been introduced it has most often involved the questioning of welfare as an all-embracing concept. Despite the strong urge to have welfare as the paramount concept, there are some confusing findings. Wellbeing is quite often used. Gonyou (1993) states that in the United States researchers prefer to use well-being because welfare has connotations of "the welfare state". Clark et al. (1997a) state that the term "well-being" is used in the United States and the term "welfare" is used in Europe. If this is the case no proper scientific reason is found for the differences. There are a couple of definitions of well-being even quite recently made. Even the Brambell Committee, sometimes referred to as the benchmark for what welfare is, referred to well-being.

When both concepts are used, they are either regarded as two concepts with distinct meanings or two concepts, one of which is wider than the other. To the first usage researchers such as Halvorsen and Andrew F. Fraser adhere, to the second Gonyou and Simonsen.

Halverson (2001) uses Broom's definition of welfare. Welfare is a state where the animal handles its environment (Halverson links it to homeostasis). Hughes' definition of welfare can be used as a good indicator of welfare. When welfare is good the animal is in full mental and physical health and in harmony with its environment. Well-being is a part of welfare. Well-being is the animal's experience of how it handles its environment (feelings in Broom's theory). This means that the animal has subjective experiences of its state or of the way it handles its environment. When the animal is in harmony with its surroundings the welfare is good. Health is not defined in terms of disease. Health is rather the capability of handling the environment (as opposed to welfare, which is the state the animal is in). The capability includes for example "vigour", which is defined as "physical energy or strength, the capacity for natural growth and survival" (Halverson 2001, p. 28)

Physical health, when defined as vigour or as absence of disease, is an important component of animal welfare, although it is not all that is needed to ensure well-being, or the individual's subjective perception of its welfare. Mental or psychological health is necessary as well. (Halverson 2001, p. 28)

The difference between welfare and health is small. Maybe it needs to be defined more clearly.

Andrew F. Fraser claims that several authors use the concept of welfare when they should use the concept of well-being (Fraser 1989). Later, he makes the same claim that welfare is not an inherent property of the animal (Fraser 1992). It is constituted by the conditions that humans provide for the animal and thus should be defined as suitable environment and care. Welfare is then defined as Def Welfare 10, which is cited from Baillière's Comprehensive Veterinary Dictionary (Blood and Studdert 1988).

Well-being, on the other hand, is animal-centred. Fraser claims that well-being consists of a physical and a mental part.

Physical well-being is clinical health. Psychological well-being is reflected ... in behavioural well-being. (Fraser 1989)

Mental well-being could be observed in normal behaviour. The term "normal behaviour" should be seen as a contrast to abnormal behaviour, such as stereotypies. Notably, both physical and psychological well-being can be seen rather as biological functioning than as subjective experiences.

Andrew F. Fraser's attempt to distinguish between the two concepts has been criticised. Hughes (1989) argues that welfare has since the Brambell Committee always been associated with the state of the individual animal and not with the state of the surroundings. If one is interested in talking about the conditions outside the animal, it is better to use "perceived welfare". Using "perceived welfare" for the exogenous influences still makes the animal the main goal. Hughes also claims that in the English language, welfare refers to being well and that should be a strong argument for letting the term welfare refer to the animal's state. But Hughes' argument is weak. In the English language welfare and well-being are almost synonymous. If they are synonymous then either term will do. Also, the Brambell Committee stated that welfare was well-being.

Gonyou (1993) distinguishes between an animal's well-being and welfare. Well-being is all that the animal experiences from moment to moment. Welfare is all that the animal experiences during a longer period. The latter concept relates to past, present and future states.

Using this distinction, welfare becomes the sum or integration of past, present and future states of well-being. Any factor which affects an animal's well-being also affects its welfare. (Gonyou 1993)

For *Simonsen* (1996) welfare is the short-term aspect and animal life quality the more enduring aspect. Animal life quality is the time-factor in combination with

the positive and negative experiences of an animal. The suggested distinction of short-term and enduring that Gonyou and Simonsen propose lies in line with the etymological roots of the English words. The dictionary description of "welfare" as "how well the individual fares in life" refers to a duration over time, while the dictionary description of "well-being" as "how well the individual is" refers to the present state of the individual. Continuing with the traditional use of the concept in the English language gives us the following suggestion.

Def Well-being 5 = momentary experiences of the animal

Def Welfare 13 [Animal life quality] = the sum or integration of past, present and future states of well-being *or* the time-factor in combination with the positive and negative experiences of an animal (definition adapted from Simonsen (1996))

This section has given strong evidence for distinguishing between well-being and welfare and I will return to the question whether well-being should be used within the science of animal health and welfare in Chapter 9, reconsidering Chapters 4-8.

The concepts at other levels than the individual level

Now let us turn to another kind of relations. At least two of the concepts, health and welfare, could be ascribed to different levels such as individual, species, ecosystem etc. A claim made within the science of animal health and welfare is that the definition of health or welfare should be based on the animal's point of view (Gonyou 1993). Therefore Def Health 9 is not a proper definition because it only regards what humans value as economic production. Def Welfare 9, Def Welfare 10 and Def Welfare 11 are not proper either because they only regard external factors. The claim made could further be interpreted in two ways.

- The concept needs to be defined so that the definiens refers to the animal or the components of the animal.
- The concept needs to be defined so that the *definiens* refers to the level of the animal (including the surroundings of the animal) and not to some systemic level above the animal.

As an example, a definition of welfare as suitable environment and care fails to meet claim 1 but meets claim 2. I will here analyse claim 2 and return to claim 1 in the final chapter.

There are suggestions where health or welfare refers to other levels, for instance the population level. In the science of animal health and welfare the term "herd health" is widely used. Herd health focuses on the level of health in the herd and measures health at the farm level. Furthermore, the term "agroecosystem health" has been coined with reference to studying health in an ecological framework

(Faye et al. 1999). Also, in environmental discussions terms like "ecosystem health" and "river health" are used. They may be used to tell something about the functions of the system, which also affects the individuals living in the system. Some say that health in this use is only a metaphor. For Lund and Röcklinsberg (2001) it is important to distinguish between different system levels. Besides the individual level, also the species level and the ecosystem level are useful. Natural behaviour becomes important on the individual level, whereas integrity becomes important on the species level and social abilities on the ecosystem level. Depending on which level one wishes to study, the individual level will be more or less important, more important on lower levels. Within the science of human health and welfare, health and well-being are often used on a personal level, but in society the term public health refers to an area where the focus is on the level of populations. Welfare can be used for an individual but also for other entities, for example "the welfare society".

Table 4. Summary of the material of the literature. The three approaches mentioned refer to the Three Broad Approaches (Duncan and Fraser 1997).

	Literature
Health	Present but shallow
	characterisation and sparse
	debate
Well-being	Is avoided at least partly in the
	science of animal health and
	welfare. The concept is used in
	the sub-area of laboratory
	animals and to some extent by
	American researchers.
Welfare	Broad but not universal
	consensus regarding three main
	approaches:
	(1) feelings
	(2) biological functioning
	(3) naturalness
	(other approaches exist and are
	sometimes preferred)
Relations between the	Sparse discussion but exists.
concepts	Welfare preferred to well-being
	among European researchers
	within the sub-area of farm
	animals.

In this thesis I will avoid analysing these approaches further. Even if there are possible definitions on other levels than the individual, there still needs to be a definition on the individual level, in animals as well as in humans. The possibility of stipulating the concepts at another level (additionally) is therefore a question outside the scope of this thesis.

In Table 4 I have summarised the information given in this chapter.

5. Categorisations of definitions of the concepts in the literature

In the previous chapter I presented various definitions of the three concepts of health, well-being and welfare. To bring together the various definitions one could propose lists of categories of definitions. This has been done in the theoretical discussion within the science of animal health and welfare. In this chapter I have gathered these different categorisations of definitions of the concepts proposing inclusive tentative lists for each concept.

Categories of health definitions

In Gunnarsson's study of textbooks (Gunnarsson 2006) of veterinary medicine he found five categories of health to which most definitions of the concept refer. The list must be seen as a preliminary approach to a classification of categories of definitions of health.

- 1. Health as normality
- 2. Health as biological function
- 3. Health as homeostasis
- 4. Health as physical and psychological well-being
- Health as productivity including reproduction (Gunnarsson 2006)

Gunnarsson (2006) claims that the naïve definition of health in veterinary medicine could be absence of disease and he also claims that many of the definitions are combinations of the categories above. This indicates that a more elaborated list could be:

- 1. Health as absence of disease
- 2. Health as normality
- 3. Health as biological function
- 4. Health as homeostasis
- 5. Health as physical and psychological well-being
- 6. Health as productivity including reproduction

7. Health as a conglomerate concept

Still, Gunnarsson avoids "absence of disease" as a category on his list. The category Health as absence of disease could mean two different things. In the first sense one must further define the term "disease". "Disease" could then mean a disturbed biological function or a mental disturbance. These two different interpretations of disease both entail that Health as absence of disease is no proper category, rather it is part of the category Health as biological function or Health as physical and psychological well-being. In the other sense, it is possible to choose a list of diseases without giving a general definition of disease to explain the meaning of health as absence of disease.³¹ Then, health is absence of these diseases which are mentioned. One interpretation of Gunnarsson's study is that the naïve definition in veterinary medicine should be understood as this last interpretation, which in formal philosophical language is a "definition by enumeration". In this case the different diseases in the textbook are seen as a catalogue of existing diseases and if none of these is observed in the animal, the animal is regarded as healthy. A possible definition of health which belongs to the category *Health as absence of disease* could then be:

Def Health 13 = absence of the diseases mentioned in (for example) *Veterinary Epidemiology: Principles and Methods*Martin, Meek and Willemberg 1987³²

Gunnarsson chooses the first interpretation, implicitly stating that the term "disease" needs to be further defined. One could assume that Gunnarsson is suggesting that the second interpretation, as diseases mentioned, should be avoided.

To judge if this proposed division of categories of health definitions is suitable one may note that the different categories are distinct, with few or no overlapping definitions. Definitions that only refer to one category could be found for all of these categories with the exception of *Health as normality*. Normality was only included in conglomerate definitions. Therefore one can argue that normality should not be a category of its own. Several definitions of health are conglomerate definitions, consisting of more than one of the categories, which complicates the adoption of Gunnarsson's proposed list of categories. In a definition of health up to three of these different categories could be present. Several of the definitions also include absence of disease as a factor, but absence of disease may be further defined as for example a "normal aberration" or "lack of harmony in the body", which belongs to the categories in the scheme.

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³¹ Pär Segerdal suggested this possible way, which I have further elaborated.

³² The same is possible within the science of human health and welfare. The catalogues of ICD could then be used in the *definiens*.

Gunnarsson's approach is very fruitful, but in Chapter 4 I condensed all the categories on his list that deal with different kinds of biological functioning into *Health as biological function*. Homeostasis is a biological function because the theory of homeostasis describes how the body responds to disturbances in function. Productivity is also biological function in a special sense. The body grows and reproduces, which is a central element in biological function. Normality is also included in biological function because when used in definitions normality is always in a conglomerate definition together with biological function, homeostasis or production. I will return to the tentative list given below in Chapter 9 when I discuss the final list in the light of the findings in Chapters 6-8.

Tentative list of categories of definitions of health

- 1. Health as absence of disease
- 2. Health as biological function
 - a. Health as general biological function
 - b. Health as normal biological function
 - c. Health as homeostasis
 - d. Health as productivity including reproduction
- 3. Health as physical and psychological well-being
- 4. Health as ability to realise goals
- 5. Health as a conglomerate concept

Categories of well-being definitions

No categorisation of different definitions of well-being exists. The close resemblance between the two concepts of welfare and well-being together with the lack of interest in (or avoidance of) the concept of well-being means that some categories of welfare (see below) could be applicable even here. I will return to this in Chapter 9. With regard to the literature of the science of animal health and welfare I propose this tentative list of categories of well-being (based on the definitions of well-being in Chapter 4).

Tentative list of categories of definitions of well-being

- 1. Well-being as feelings
- 2. Well-being as a conglomerate concept

Categories of welfare definitions

Unlike what is the case when it comes to the concepts of health and well-being, several proposals for the classification of welfare definitions with regard to

content have been made within the science of animal health and welfare. The most commonly adopted one is that involving the three broad approaches found in Duncan and Fraser (see B, below). I will here present these classifications in historical order and propose a tentative comprehensive list of my own below (then I will return to the list in Chapter 9 for a final version).

Linda Keeling (1996) proposed a three-category list of welfare concepts which she regarded as important:

Α

- 1. Welfare is solely dependent on what animals feel
- The welfare of an individual is its state as regards its attempts to cope with its environment
- Welfare is a state of complete mental and physical health, where the animal is in harmony with its environment

Duncan and Fraser (1997) proposed another three-category list of welfare concepts based on underlying values within the science. This list is at present regarded by several authors as the Three Broad Approaches within the science of animal health and welfare:

B

- 1. Welfare is the subjective experience of animals
- 2. Welfare is the biological functioning of animals
- 3. Welfare is the nature of animals

Duncan and Fraser's list has been further developed by Alrøe et al. (2001) into the following list where the first and third category have been further refined:

 \mathbf{C}

- The animal should feel well, corresponding to the concepts of experience, feeling, interest, and preference
 - a. Welfare as the satisfaction of preferences, whereby the most preferred surroundings result in improved welfare. This implies that measures of welfare are always relative or comparative.
 - Welfare as pleasure (hedonism), i.e., conceived as
 pleasant feelings along with the absence of
 unpleasant feelings. This implies that, in principle
 (if feelings can be measured in such a way that they
 can be summed up), an absolute measure of welfare

can be provided with which improvements can be measured.

- The animal should function well, corresponding to the concepts of need and clinical health
- The animal should lead a natural life through the development and exercise of its natural adaptations, corresponding to the concept of the "innate nature" of the animal
 - a. The animal's genetic or innate nature as it has emerged through evolution, domestication, breeding, and biotechnology – and that continues to change.
 - b. The animal's naturalness or integrity as an expression of the organismic harmony that can be broken by significant and fast modifications from the natural ancestral form by way of operation, medication, breeding, and biotechnology, including genetic engineering.

The refinement of category 3 into 3a) and 3b) is according to the authors crucial for separating the view of animal treatment in organic farming (3a), where fast and (for the animal) negative genetic modifications are avoided, from the view of animal treatment in industrial farming (3b). I have here regarded them both as natural behaviour.

The European Commission's Scientific Committee on Animal Health and Animal Welfare (2001) proposed the following list in 2001. Definitions of welfare can be classified into:

D

- 1. Descriptive types of definitions
- Definitions referring to an animal being in harmony with its environment
- Definitions referring to adaptation to or control of the environment by the animal
- Definitions concerned with the subjective experience of the animal

Notably this list presents two different ways of presenting definitions. "Descriptive types of definitions" are not a matter of content but rather of purpose. The other three types on the list are separated according to content.

Unfortunately no further explanation of the definition-type "descriptive" is offered more than that the evaluation of welfare needs to take account of scientific evidence. The definition chosen as an example in the text is the one proposed by the Brambell Committee, which could fit into a category of *Welfare as well-being*. I have therefore chosen to exclude the category of descriptive types of definitions from the comprehensive list below.

Nordenfelt has proposed a further comprehensive list in his *Animal and Human Health and Welfare – A Comparative Philosophical Analysis* (Nordenfelt 2006). Nordenfelt has considered lists A, B and C and incorporated them into his list (although not fully). Welfare can in the science of animal health and welfare, states Nordenfelt, be defined as:

Е

- 1. Development according to natural selection
- 2. Coping
- 3. Well-being
- 4. Satisfaction of preferences
- 5. Fulfilment of needs
- 6. Natural behaviour
- 7. A conglomerate notion of welfare

This list still lacks two interesting ideas, namely Welfare as suitable environment and care and Welfare as complete mental and physical health and being in harmony with the environment (as present in list A), which have been present in the ongoing discussion within the science of animal health and welfare. Welfare as suitable environment and care has not been recognised in any of the classification schemes, even though a definition of this kind is present in Baillière's Comprehensive Veterinary Dictionary (Blood and Studdert 1988). This category could be useful in a three-concept system where for example good welfare is good external living conditions. A more inclusive tentative list of groups of welfare definitions is here proposed which combines the different lists above:

Tentative list of categories of definitions of welfare (letters in bold refer to the different lists above)

- 1. Welfare as development according to natural selection E
- 2. Welfare as coping **ADE**
- 3. Welfare as fulfilment of needs CE

- 4. Welfare as well-being **ABDE**³³
 - a. Welfare as pleasure C
 - b. Welfare as satisfaction of preferences CE
- 5. Welfare as natural behaviour **BE**
- Welfare as complete mental and physical health and being in harmony with the environment AD
- 7. Welfare as suitable environment and care
- 8. Welfare as a conglomerate concept **E**

I have chosen to differentiate between welfare as fulfilment of needs and welfare as satisfaction of preferences. Welfare as the fulfilment of needs is still present on this list even though I have indicated that the category may be reduced to Welfare as coping, Welfare as well-being or Welfare as a conglomerate concept. There could be examples of Welfare as fulfilment of needs in the interview material or in the legislation which can not be reduced in that way. I will return to make a final list in Chapter 9 taking regard of the findings in Chapters 6-8.

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³³ Also called "feelings" or "subjective experiences".

6. The three concepts in the interviews

As a part of my study, eight Swedish veterinary surgeons were interviewed qualitatively during the period 2002-2004 (for selection of veterinary surgeons and methods see Chapter 3). The whole study also contained doctors but that material is not presented here (for a comparison between doctors and veterinary surgeons see Lerner (2008)). In this chapter I present the results of a phenomenographic analysis of the interviews together with a conceptual discussion of the results. In some obvious cases I already here relate the ideas expressed in the interviews to the definitions or categories of definitions presented in Chapters 4 and 5. I will return to the categories of definitions presented in this chapter for a final comparison in Chapter 9 using all the three materials. In the sections Health, Well-being and Welfare I will present these views of the informants without explicitly referring to the informants.

Health

Among the veterinary surgeons that I interviewed health is defined in six different ways: Health as normal biological function, Health as freedom from disease and being in good physical condition, Health as performance, Health as being well or living in a sound way, Health as absence of diseases, injuries or unwanted mental states and Health as normal recovery processes and control of the situation. I will also make comments on mental health in animals.

HEALTH AS NORMAL BIOLOGICAL FUNCTION

Health is when the normal or natural physiological bodily functions are working without pathological changes or reduced functions. The animal should also be free from infectious diseases. One approach to normal (or natural) function is that when the animal is non-functioning it diverges from normal physiology, normal behaviour and normal capacity. To be functioning is to be handling those situations that arise. Mental disease is observed through disturbances in behaviour. This is close to a theory of coping and may be linked to a homeostasis view. Another approach is explicitly presented as a homeostasis theory and the animal is non-functioning when it does not reach homeostasis. In this view health could be the same for all animals regardless of role or species.

[Health] deals with conditions for the organs of the body to have a natural function, kidneys, liver, intestines, immunosystem. (interview person V6) 34

HEALTH AS FREEDOM FROM DISEASE AND BEING IN GOOD PHYSICAL CONDITION

Health is when the animal has freedom from disease and is in good physical condition. Health is something physical even though mental health exists in animals.

Health is rather a physiological concept or a physical concept designating freedom from disease and being in good physical condition. Good health is appropriate weight for the season. Freedom from parasites does not belong here because parasites do not always cause disease. Parasites cause disease only when they are too many or when they are on their way to the stage in the host animal where they do not cause damage. (V5)³⁵

Disease is when the animal has lost its normal condition. The informant describes this as an inner imbalance as a result of an inner medical fault or an outer influence in the form of food shortage, poisoning substances or pathogens. Being in good physical condition involves activity and the right amount of fodder of the right quality.

Health is not role or species specific because it is the successful answer to conditions in the environment, quality and amount of food, shelter and climate. This view is a conglomerate view of *Health as biological function* (probably in the sense of homeostasis) and a suitable environment (which has not been introduced as a category of definition of health either in the interviews or in the literature presented in Chapters 4 and 5).

HEALTH AS PERFORMANCE

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Health is absence of disease, where disease is further defined in terms of performance. If the animal performs according to expectations, everybody is happy and then the animal is in good health. It seems that an animal still has health even if it has diseases which are non-detectable or detectable but not disturbing performance.

³⁴ In Swedish: "[Hälsa] handlar om förutsättningar för kroppens organ att kunna ha en naturlig funktion, njurar, lever, tarmsystem, immunsystem."

³⁵ In Swedish: "Hälsa är ju mer ett fysiologiskt begrepp eller ett fysiskt begrepp som beskriver frihet från sjukdomar, i god kondition. God hälsa är i lagom hull för årstiden. Och egentligen inte frihet från parasiter. För parasiter är ju inte alltid sjukdomsframkallande. Utan parasiter blir ju sjukdomsframkallande, i vissa fall antingen därför att dom är för många eller för att dom inte har uppnått det stadium i värddjuret där dom inte orsakar skada."

The most important thing [for health] is to look at the animal and see how it behaves, how it looks and what it performs. $(V1)^{36}$

This idea of health could be refined in a definition such as the following:

Def Health 14 = absence of those diseases that disturb or hinder the animal's performance (or expected performance)

The definition is largely based on the role of the animal. Performance is seen as being a question not only of the animal's ability to reach its goal but also of an evaluation by the human. This evaluation involves a comparison between the expected performance and the actual performance. An animal expected to have a high performance is more easily regarded as having ill-health than an animal expected to have a low performance.

HEALTH AS BEING WELL OR LIVING IN A SOUND WAY

[Health is] to be well and to live in a good and sound way. $(V4)^{37}$

Health is not only seen as being well but also as feeling well mentally. This is a holistic view of health but rather empty. In the characterisation of ill-health the informant mentions diseases, living conditions, ability to perform natural behaviour and treatment of the animal.

Ill-health is more than just disease. Ill-health is also living conditions, the ability to perform natural behaviour and how the animal is treated. (V4)

If the animals feel bad and is not treated in an acceptable way, disease will occur. $(V4)^{38}$

This indicates that this view could belong to a conglomerate definition. This definition has species restrictions. A certain amount of mental ability is needed.

HEALTH AS ABSENCE OF DISEASES, INJURIES OR UNWANTED MENTAL STATES In this view three different ways of expressing the idea are present.

- 1. Health is absence of infections, injuries or stereotypies (V3)
- 2. Health is absence of diseases, injuries or pain (V7)

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³⁶ In Swedish: "Det viktigaste [för hälsa är att] titta på djuret och se hur den beter sig, hur den ser ut och vad den presterar."

³⁷ In Swedish: "[Hälsa är] att man är frisk och får leva på ett bra sunt sätt."

³⁸ In Swedish: "I ohälsa lägger jag in mer än bara sjukdom. Där lägger jag in levnadsförhållanden, alltså hur man har möjlighet att utöva sitt naturliga beteende. Och hur man blir behandlad helt enkelt.", "Om djuren inte psykiskt mår bra och inte hanteras på ett acceptabelt sätt, så leder det ju till sjukdom."

3. Health is absence of diseases, injuries or suffering (VT)

These three ways differ only slightly. In the first way only infectious diseases are considered. Physical health is absence of infections or injuries. Mental health is absence of stereotypies. In the second way health is to be as free as possible from disease, pain and injury. The informant presenting this way of looking at health provided a more elaborate and interesting attempt to define health when attempting to explain (see Health as normal recovery processes and control of the situation). In the third way health is absence of disease, injury or suffering. Health is both on the physical and mental level. A disturbance in behaviour is an example of mental ill-health. The third way demands a higher level of processing the information in the brain because suffering is used instead of pain.

This view of health results in a conglomerate definition. This conglomerate definition is wider than Health as freedom from disease and being in good physical condition.

HEALTH AS NORMAL RECOVERY PROCESSES AND CONTROL OF THE SITUATION

In the explanation of the view of Health as absence of disease, injuries or unwanted mental states in the section above given by one of the informants, an interesting idea for a new kind of definition arose. Physical health is basically a question of normal recovery processes. The animal should have normal growth, reproduction and behaviour. Mental health is to have a certain amount of control and to be able to predict the future in the environment. The animal must be able to adapt to changes in the environment without a large change in the physiological functions but also have the ability to foresee what will happen in the future so that it can avoid troublesome situations. One indicator of good mental health is if the animal remains calm in a narrow passage because the animal knows what is waiting on the other side. Another indicator is that the animal is stimulated by other animals both physically and socially. The animal in good health has control over diseases through normal processes of healing, control over its reproduction etc. I will here make an attempt to define health according to this view:

Def Health 15 = the animal's ability to have control of its situation, with regard to both coping systems and the forestalling, wherever possible, of the need for coping

COMMENTS ON MENTAL HEALTH

Despite the fact that my questions about mental health were introduced rather late in the interview, several informants introduced early in the interview the distinction between somatic and mental health in animals. What, then, is mental health in animals? Mental health in animals is difficult to observe or measure. One possible way of studying it is by examining the animal's behaviour. Mental disease or ill-health is disturbances in behaviour, for example an animal becoming

aggressive and attacking other animals. Because humans are restricted to observing the animals without talking to them, the richness of the animal's mental world is unknown. An animal may also change its behaviour due to the surrounding circumstances. One informant gives an example of horses playing ill to be excused from the marching exercises in the army. The idea of control and foreseeing a situation is an example of a certain mental ability.

Today, the science of animal health and welfare acknowledges that animals have a higher level of conscious thought than was previously believed, and research on suffering is particularly evident in the research on welfare. Some informants claimed that some aspects only related to humans, namely insight about the disease or worries about the future (see Species aspects of health, below). Another difference between animal and human health is that when mental ill-health occurs in the animal, the animal is normally put down.

Normally one breeds from animals that behave, are social, and possess good mental health. $(V2)^{39}$

Well-being

Well-being is characterised by the veterinary surgeons as Well-being as subjective experiences. One informant finds it difficult to ascribe well-being to animals (see Relations of the concepts, below).

WELL-BEING AS SUBJECTIVE EXPERIENCES

Well-being as subjective experiences could be one of three kinds.

- 1. Well-being is the subjective experiences of the animal.
- Well-being is when the individual experiences satisfaction of its needs. Different species will have different needs and a different number of needs.
- Well-being is the experience in an animal that has the ability to perform its natural behaviour.

All of these belongs to the category Well-being as feelings.

Welfare

Among the veterinary surgeons that I interviewed welfare is characterised in three different ways: Welfare as the Five Freedoms, Welfare as being well and well suited in the social and material situation and Welfare as a suitable environment. Some informants find it difficult to ascribe welfare to animals (see Relations of

³⁹ In Swedish: "Normalt sett så avlar man på djur som beter sig, som är sociala och har god mental hälsa."

the concepts, below). Striking is that the environment is important in all views of welfare

WELFARE AS THE FIVE FREEDOMS

Welfare is according to one view the same as the Five Freedoms. Important, besides the Five Freedoms, is the opportunity for the animal to meet other animals of the same species. The parameters of welfare differ among species (a bee has few parameters while a social ape has many). Welfare is role-specific, but not species-specific. Only animals in human care can have welfare. All animals in human care, regardless of species, can have welfare.

...welfare [is] the five F of the care of animals. And that is five freedoms. Let us see if I remember...

- 1. Freedom from hunger and thirst.
- 2. Freedom from suffering.
- 3. Freedom from physical injury and pain.
- 4. Freedom to behave naturally.

And a fifth F which I've lost now. (VT)⁴⁰

This quotation shows mainly the same wording as the Five Freedoms proposed by FAWC (see Welfare, The Five Freedoms, Chapter 4) and the last F which the informant has forgotten is probably Freedom from discomfort. The informant proposing this view sees welfare as the environment and care of the animal.

WELFARE AS BEING WELL AND WELL SUITED IN THE SOCIAL AND MATERIAL SITUATION

In this view welfare for an animal is when it feels well with regard to social and material aspects. The animal should have well-being, it should have good social relations and a suitable environment.

Welfare in animals [is] when they mentally and physically, if these concepts are applicable to animals, feel well in their social and environmental situation. So that the environmental conditions are as

3. Frihet från fysisk skada och smärta.

Och ett femte F som jag tappade i hastigheten."

⁴⁰ In Swedish: "...välfärd [är] djuromsorgens fem F. Och det är då fem friheter: Nu skall vi se om jag kommer ihåg ...

^{1.} Frihet ifrån hunger och törst.

^{2.} Frihet ifrån lidande.

^{4.} Frihet att bete sig naturligt.

close to what the animals are designed for or adapted for as possible.... And then also socially if they are social. $(V5)^{41}$

This view ends in a conglomerate definition of welfare.

WELFARE AS A SUITABLE ENVIRONMENT

Welfare could also be a suitable environment for the animal so that the animal can reach its goal. The goal could be one of the following:

- 1. Satisfaction of physiological needs.
- 2. Satisfaction of natural needs.
- 3. Ability to perform natural behaviour.

Examples of parameters to evaluate welfare could be:

The conditions we call animal welfare, how animals live, what fodder they get, how they are able to go outside, in what way they have contact with other individuals. $(V6)^{42}$

Even though the informants sometimes find it difficult during the interviews to distinguish between the concepts of welfare and well-being, the analysis suggests that the goals mentioned above are defined as well-being (see Well-being as subjective experiences in this chapter) and welfare is defined as a suitable environment (and suitable care).

Closely related concepts

Three closely related concepts were introduced by the informants in the interviews. These were quality of life, animal protection and animal-friendliness. These three concepts were not a part of the interview guide and therefore no questions about them were added in the interviews with the other informants.

QUALITY OF LIFE

One informant spontaneously uses *quality of life*⁴³ 5 or 6 times during the interview. Quality of life is used in answers to questions concerning health or

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⁴¹ In Swedish: "Välfärd hos djur [är] när dom psykiskt och fysiskt, om man nu kan använda dom uttrycken med djur, mår bra i sin sociala situation och sin rumsliga situation. D.v.s. att dom yttre förutsättningarna är så nära som dom är konstruerade för eller som dom har utvecklats till att leva i. Den miljön, den temperaturintervallet, det klimat som dom är. ... Och sen naturligtvis också socialt, om dom nu är sociala."

⁴² In Swedish: "Det som vi kallar för djurens välfärd, hur djur bor, vad dom får för foder, på vilket sätt dom har möjlighet att komma ut och röra sig, på vilket sätt dom får kontakt med andra individer."

⁴³ In Swedish: *Livskvalité*.

well-being, but seems to be more similar to well-being than health. One example of quality of life is to be free of chronic pain.

> If it is a lousy quality of life at home, the animal doesn't eat, is unable to walk and the diagnosis is serious like cancer or a severe renal failure, then you have to weigh this and give the advice that it is no use taking this animal home. (V2)⁴⁴

> Animals with severe untreatable diseases are often put down in an early phase of the disease, when the diagnosis is obvious and the quality of life is so bad that you judge that it's not even a dog's life any more, because now they only have pain and can't have any wellbeing any more, and then the animal is often put down. (V2)⁴⁵

The rather frequent usage of "quality of life" was discovered during the analysis of the interview and therefore no additional question for clarification was put during the interview.

ANIMAL PROTECTION AND ANIMAL-FRIENDLINESS

One informant prefers animal protection and animal-friendliness to welfare and well-being.

> Animal-friendliness is less about ethics and involves more taking care of the interests of the animal in a specific situation. To be animalfriendly is to solve the problems the animal has so that it feels well. Every time animals are involved you should replace the expression humane treatment of animals with animal-friendly treatment of animals or humane hunting with animal-friendly hunting. In "humane hunting", what kind of human are you hunting?

> There are organisations that protect animals' interests and want to help animals in need. Animal protection is legislation and regulations concerning less important demands or what we are allowed to do and not allowed to do. So we want an animal-friendly keeping of animals. which means a high level of welfare for the animals. (V7)⁴⁶

⁴⁴ In Swedish: "Är det en urusel livskvalité hemma, djuret äter inte, orkar inte gå nånting och diagnosen blir grav exempelvis cancer eller en mycket kraftig njursvikt så får man väga ihop det och ge rådet att det är nog ingen idé att ta hem det här djuret."

⁴⁵ In Swedish: "Djur med svåra obotliga sjukdomar tas ju bort i ett rätt tidigt skede av sjukdomen när man har klar diagnos och när livskvalitén är så dålig för dom att man bedömer att det inte är något hundliv längre, för nu har de bara smärtor och kan inte ha något välbefinnande alls längre och då blir det ju ofta avlivning."

⁴⁶ In Swedish: "Djurvänlighet är mindre etik och mera att ta vara på djurets intressen i den givna situationen. Att vara djurvänlig är att lösa de problem som djuret har så att det mår bra. I alla

The two concepts proposed by the informant seem more to deal with the human interaction than the animal.

Relations between the concepts

MENTAL HEALTH IN RELATION TO WELL-BEING

The relation between mental health and well-being is somewhat indistinct in the interviews. The concepts are closely related and some informants are unable to give an account of the differences. One view is that mental health is objective or could be observed through studies of behaviour. Well-being, on the other hand, is the animal's experience of the situation.

Well-being, it is the animal's experience. Animals with good health which are living in an environment permeated by welfare-thinking hopefully have well-being. (VT)⁴⁷

Well-being is a mental experience in the animal. It is alpha-waves in the brain, positive waves making the animal satisfied. The animal may feel well even in the wrong climate or the wrong social environment. The experience is important, in contrast with what is the case when it comes to mental health, which is defined objectively. (V5)⁴⁸

There is also a semantic aspect distinguishing the concepts. Mental health includes both positive and negative states. Well-being only consists of positive states.

Well-being is a positive term. Mental health is a descriptive one. Mental health may be both bad and good. But well-being is indeed BEING WELL. The whole word says that it is a dimension on the positive side. Just like suffering should be the opposite. (V5)⁴⁹

sammanhang med djur så borde man ersätta ordet human djurhållning med djurvänlig djurhållning eller djurvänlig jakt. Uttrycket "human jakt" vad jagar man då för människa liksom.

Det finns organisationer som har djurskyddsintressen som vill hjälpa djur i nöd. Djurskydd är lagstiftning och föreskrifter som reglerar mindre krav eller vad vi får göra och inte göra. Så att vi vill ha en djurvänlig djurhållning som innebär en hög grad av välfärd för djuren."

⁴⁷ In Swedish: "Välbefinnande, det är ju djurets upplevelse. Djur i god hälsa och i liksom i en omgivning som är genomsyrad av ett välfärdstänkande, har förhoppningsvis ett välbefinnande."

⁴⁸ In Swedish: "Välbefinnande är en mental upplevelse hos djuret. Det är alfavågor i hjärnan, det är positiva vågor som gör att djuret känner sig tillfreds. Det kan vara ett välmående djur även fast det är i fel klimat eller fel social miljö. Det är själva upplevelsen i det mentala som är viktigt till skillnad ifrån hälsa som är nånting som man kan definiera mera objektivt."

⁴⁹ In Swedish: "Välbefinnande är ju ett positivt ord. Mental hälsa är ju ett beskrivande ord. Mental hälsa kan ju va dålig och bra. Men välbefinnande det säger ju VÄL BEFINNANDE. Hela ordet säger att det är ett mått på den positiva sidan. Precis som då lidande skulle vara motsatsen."

In one view, mental health is seen as a part of well-being. Also somatic health is a part of well-being. For good well-being no major wounds or infections should be present. There are differences between animals and humans in the relation of health and well-being. Good health is needed for a high degree of well-being in animals. Humans, on the other hand, may have a serious disease but still have a high degree of well-being due to good treatment in a good social environment.

In another view, health implies that the animal is somatically well. For well-being, this criterion is not needed. The animal can have good well-being even while having a diabetes disease. Well-being is the mental level and is more influenced by how the animal is treated than by the disease.

WHAT TO USE, WELFARE OR WELL-BEING?

In one view of the informants the terms "welfare" (*välfärd*) and "well-being" (*välbefinnande*) are synonymous. Two other views were expressed that show differences. According to one of them the terms may be synonymous in the case of animals but different in the case of humans, this being explained by humans being able to understand or value some aspects that animals cannot. According to the other welfare and well-being are defined differently, for example well-being is the experience of welfare.

Several informants question the use of "welfare" in respect of animals. Welfare is regarded as a concept for humans or as being too abstract. One informant characterises welfare as having healthy finances or the ability to have a holiday. Those aspects may not be ascribed to animals. This informant is also the most consistent, only using well-being throughout the interview. Another informant changes suddenly from ascribing welfare to animals to avoiding the word. After that change the only possible use of welfare for animals was the example of an air-conditioned car for a dog. Other examples are that informants connect welfare to the welfare state or use other terms such as "have a good life", "has control" or "harmonious group". Animal protection and animal-friendliness are suggested as better concepts than welfare and well-being (see Closely related concepts above). When it comes to well-being, on the other hand, one informant claims that it may only be used in the case of humans.

One may argue that "welfare" is an international and technical term that has been improperly introduced or not accepted among the veterinary surgeons. The international discussion about welfare has primarily been driven by ethologists and animal scientists. Still, other facts question this argument. Welfare was laid down as an important concept for animals in the report from the Brambell Committee as early as 1965 (see Chapter 4). Articles with the word in the title

have been published in the *Swedish Veterinary Journal*⁵⁰ since 1996 (Keeling 1996). All veterinary surgeons that belong to the Swedish Veterinary Society⁵¹ have access to this journal and therefore one may assume that the informants in this study should be aware of the concept and of the discussion.

A better explanation would be that the semantic difference between the concepts in the Swedish language is strongly influencing the veterinary surgeons in this study. In the Swedish language well-being is explained as "feel well" while welfare is explained as "above standard, especially material standard or safety" (Språkdata Göteborgs universitet 1999). In Sweden welfare relates more to the surroundings of the individual than does well-being, which relates more to the individual's feelings. The concept of welfare has strong connotations with external conditions. Welfare can also be used for a group of individuals. Here the Swedish language differs from the English language, where the concepts are regarded as more or less synonymous. The usage in Sweden opens the door to differences of meaning between welfare and well-being.

Nature, normal and suffering

Despite the problem of deciding whether to choose "welfare" or "well-being", a central aspect of both terms was natural or normal living. The lack of reference to suffering in the interviews was also evident in the material.

NATURAL AND NORMAL

The natural and normal is present in several terms in the interviews, such as "natural function", "natural need", "natural behaviour" and "animal nature". Some of the informants use "natural" and "normal" as synonyms. The frames of reference for the two terms are in this view more or less the same. One informant sees "normal" and "natural" as synonymous regarding behaviour. When it comes to tissue changes only "normal" is applicable. Another informant seems to use "natural" and "normal" synonymously when talking about function. The animal's needs are central for some veterinary surgeons. Also needs can be labelled as natural or normal. The nature of animals or animal nature is also used. For these terms there is no equivalent term labelled as normal.

I believe that you in many cases forget to look at how the animals truly are, where they are from, what their real nature is, their natural environment and their natural activity. Are they social animals or not?

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 $^{^{50}}$ In Swedish: Svensk Veterinärtidning.

⁵¹ In Swedish: Sveriges Veterinärförbund.

So you should look at that and try to construct as reasonable an environment as possible for each animal species or race. $(V2)^{52}$

Nature and normal may have different meanings. Within the science of human health and welfare a debate about "normal" is evident. "Normal" is often given two distinctive meanings, normal as a statistical frequency or normal as compliance with a norm. In the first meaning sickle cell anaemia is normal in Africa where a large proportion of the population carry the disease. In the second meaning behaviour is labelled normal if the behaviour is accepted within the social norms.

When it comes to natural, at least three different meanings may be assumed. According to the first meaning natural refers to those things we see in nature. According to the second meaning natural is something given by genetic constitution. According to the third meaning behaviour is natural because the behaviour resembles our norm regarding how an animal should behave in nature.

The difference between the first and the second meaning of natural is that the first meaning is behaviour as a result of a natural environment, while the second meaning is behaviour as a result of gene expression. This implies that in another environment the behaviours that result from external stimuli may not occur, while behaviours that result from gene expression occur even if exhibiting such behaviours is maladaptive. The flight behaviour in hens is an example of natural behaviours in the first sense and dust bath in hens is an example of natural behaviours in the second sense. There may also be a difference between the second meaning of normal and the third meaning of natural due to different frames of reference for the norms.

Among the informants where the frames of reference for natural and normal differ, "natural" has a connotation of what is observable in nature while "normal" has a connotation of what is observable in normal individuals. The term "normal" is therefore wider than the term "natural". "Natural" then refers to normal individuals in the natural environment (wild populations), while "normal" refers to normal individuals in the natural environment or man-made environments.

Another possible explanation⁵³ for this view among the veterinarians is that animals in human care are treated in a way that prohibits an evaluation whether

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⁵² In Swedish: "Jag tror att i många fall så glömmer man bort och titta på hur djuren är, var de kommer ifrån, vad deras natur egentligen är, deras naturliga miljö och vad deras naturliga aktivitet är. Är dom flockdjur eller är dom inte flockdjur? Så man bör titta på det och försöka skapa en så vettig miljö som möjligt för respektive djurart eller djurras."

⁵³ This is not mentioned by the informants.

the behaviour is natural or not. Let me give one example from an important issue regarding animals in human care, namely lack of stimulation. In a human flat a cat is resting for most of the day. Is this an apathetic cat because of lack of stimulation or does the cat feel well and therefore rest most of the day? In a situation in nature we presuppose that a total lack of stimulation never occurs. In this way, natural becomes normative. The natural environment is assumed to be more stimulating for animals.

Only one informant offered an explicit definition of natural behaviour.

Natural behaviour is what we with objective methods try to understand. Basic behavioural needs evident in a species or a strain of a species. To give an example, dust bath is a natural behaviour in hens. It is even so natural that when no dust is possible they still perform the behaviour. It has a practical function which in the end will raise their level of well-being if done properly, that is natural behaviour. Caring for offspring is another natural behaviour. (VT)⁵⁴

This could be rewritten as a formal definition with a specific criterion as to the kind of needs referred to.

Natural behaviour = the basic behavioural needs for an animal species or breed. We must be able to study these needs with objective methods (adapted from VT)

This informant differentiates between natural behaviour and the behaviour one sees in nature.

I see a big difference between natural behaviour and the behaviour we see in nature. It is not the same thing. Natural behaviour is a basic behaviour. The behaviour is necessary for the animal to reach an acceptable level of well-being. A natural behaviour for a predator is to kill prey and eat it raw. Our dogs are predators, but they don't need to chase a hare, kill it and eat it each day for it to be said that they have a natural behaviour. Hunger is what drives them. As long as the dog is reasonably satisfied, the behaviour of hunting remains unperformed. In the case of the dust bath, on the other hand, we know that it is so fundamental to the behaviour and well-being of the hens that when

också i sista ändan skall öka deras välbefinnande då att genomföra det här på ett korrekt sätt, det är ett naturligt beteende. Omhändertagande utav avkomman är ju ett annat naturligt beteende."

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⁵⁴ In Swedish: "Naturligt beteende, det är ju vad vi försöker med objektiva metoder att konstatera är på det sättet. Grundläggande beteendebehov som en djurart eller ett djurslag har. För att ta ett exempel, sandbad är ett naturligt beteende hos höns. Och det är ju t.o.m. så naturligt att även om dom inte har ett sandbad så utför dom sandbadet ändå, även om det har en praktisk funktion som

restricted they still do it, and then it is called a stereotypy. So the claim that wild animals don't do that does not mean that we have thwarted our animals in respect of their natural behaviour. But if a certain kind of animal has as a behaviour necessary for its well-being to move a lot and we thwart its opportunity to behave in this way, which will create a negative consequence for the animal, then we have thwarted this animal's ability to perform natural behaviour. (VT)⁵⁵

This implies that the concept of natural behaviour entails fewer kinds of behaviour than "behaviour one sees in nature". Natural behaviour only entails those behaviours that are "necessary for the animal to reach an acceptable level of well-being". I will further discuss natural behaviour and the nature of animals in Chapter 8.

THE ABSENCE OF SUFFERING

Strikingly in the interview material, the concept of suffering is hardly used by the informants in their initial definitions of the concepts of health, welfare and wellbeing. Only one informant regularly refers to suffering. Some other informants mention suffering on some occasion and some not at all. Instead of suffering expressions such as "get on", "not getting on", "satisfied", "on teeling well" or "a disturbance in relation to the prerequisites for feeling well" were used. Nor is suffering mentioned in the answers to the questions in the interview guide about opposite words to welfare, even though one informant indicates that suffering is the opposite of well-being. "On the direct question about suffering and its

⁵⁵ In Swedish: "Alltså jag ser en stor skillnad på naturligt beteende och hur djur beter sig i det vilda eller i naturen. Det är inte samma sak. Naturligt beteende det är alltså ett grundläggande beteende. Men det är alltså ett beteende som skall vara nödvändigt för att dom kan ha ett acceptabelt välbefinnande. Det är ju ett naturligt beteende för ett rovdjur att nerlägga byte och käka upp det rått. Våra hundar är rovdjur, men dom behöver inte varje dag jaga en hare och nerlägga den själv och käka upp den för att man skall kunna säga att den får möjlighet att bete sig naturligt. Hunger är ju en drivkraft till detta. Så länge vi håller den hyfsad mätt, så utlöser man inte jaktbeteendet i den meningen. Medans då, om vi skall återgå till sandbadet, det vet vi att det är så grundläggande för hönsens beteende och välbefinnande, att har dom inte möjlighet så gör dom det ändå och då är det ett stereotypbeteende. Så att argumenteringen att så gör inte vilda djur betyder inte att vi har förhindrat våra djur från att ha ett naturligt beteende. Däremot om ett djurslag har, som ett nödvändigt beteende för sitt välbefinnande att det skall röra sig väldigt mycket, om man fråntar det den möjligheten och att det skapar på något sätt en negativ konsekvens för djuret, så har vi fråntagit det djuret möjlighet att bete sig naturligt."

⁵⁶ In Swedish: trivs, inte trivs, nöjd.

⁵⁷ On the question about the opposite word to welfare, V5 answers penury. In this chapter I have not separately presented results from these questions, even if the specific answers are semantically interesting.

connection to the concepts, several informants claim that suffering is an important part of or has an important relation to the concepts. What, then, is the reason for the sparse use of suffering? An analysis of the responses to the direct questions on suffering reveals that almost all informants discuss the problem of knowing if an animal is suffering. Three kinds of problems are mentioned.

(1) An animal does not show its suffering to others.

It is hard to notice suffering in a horse, because they don't moan, but they can behave. ... The difference [in behaviour] is very, very tough to judge. You have to look at the horse's behaviour together with aids such as blood samples, endoscope, ultrasound, X-ray and stuff. You can try to alleviate the pain, but the suffering may not disappear. Then you can try giving the horse tranquilizing medicine and look at the horse's behaviour when it relaxes ... (V1)⁵⁸

Many diseases probably involve pain and suffering without any obvious signs. An animal sitting calmly in a corner can be in severe pain or be almost unconscious without us knowing, because animals do not scream or whine as humans do. Animals are almost always silent because silence facilitates their survival. (V7)⁵⁹

(2) Suffering as well as pain is subjective.

So, pain and suffering is for me something modern and it is very troublesome that animals should suffer. I believe it is the most common question from the animal owner if you have a small animal practice – Is he suffering? – Yes, it certainly causes pain, this. – Well, I don't want him to suffer, absolutely not in any way. It's very moving, this that the animal mustn't suffer in any way. And there is a difference between town and country regarding the view of what suffering is. The person living in a town has a more idealistic picture than the person in the countryside, possessing animals and seeing animals in daily life, either wild or tame, or if they have a farm or the

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⁵⁸ In Swedish: "Det är svårt och se lidande hos en häst, för dom jämrar sig inte men dom kan bete sig, ... Så där är gränsen väldigt väldigt svår och hur man då skall bedöma. Då får man ju se på hästens beteende plus att vi har hjälp utav hjälpmedel, typ blodprov, endoskopi, ultraljud, röntgen och sådana saker. Sen kan man ge dom smärtstillande och se om det blir någon kurering av smärtan, lidandet kanske inte försvinner. Sen kan man ge hästarna lugnande för och se hur dom beter sig när dom slappnar av ..."

⁵⁹ In Swedish: "Så att många sjukdomar förlöper säkert med smärta och lidande som vi inte har tydliga tecken på. Ett djur som sitter stilla i ett hörn här kan ju ha både våldsamt ont och kan va halvt smärtfritt eller medvetslöst utan att vi egentligen vet vad, för djur skriker inte och kvider som människor gör. Utan djur håller nästan alltid tyst därför att de befrämjar deras överlevnad."

like. They live with animals in a totally different way. So we can't have a strict scientific definition for that. $(V5)^{60}$

(3) Behaviour is difficult to interpret. The possible way of studying suffering would be through behaviour, but behaviour is difficult to interpret, especially in the case of injuries where the animal needs to move though in pain.

If you are limping on all four legs [due to arthrosis] you still have to move even if you are not doing it well. $(V2)^{61}$

A broken leg in a goat heals excellently, precisely because the goat is able to walk on three legs. Pain is helping, because the leg is held still so the fracture is stabilised. Instead, an animal that is forced to walk on the broken leg, an elk, has much more difficulty in healing the fracture. $(V7)^{62}$

The view that suffering is absent in animals also exists.

Applying the term "suffering" to animals is difficult for me. I probably learned from my old mentor that suffering in animals is tough to say anything about. The concept is more mental. Humans can suffer. If your children die you experience unbelievable mental suffering. But animals do not posses this concept, so I never use the word suffering when I talk about animals. I use pain and disease. (V3)⁶³

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⁶⁰ In Swedish: "Så att det här med lidande och smärta det är för mig nånting som är väldigt modernt och väldigt besvärande att djur skall behöva lida. Och det tror jag är det vanligaste om du har smådjurspraktik, så är det oerhört vanligt att djurägaren frågar: - Lider han? - Ja, det gör säkert ont det här. - Ja, jag vill inte att han skall lida, absolut inte. Man känner oerhört patos för det här, alltså djuret får inte lida på något sätt. Och den bilden skiljer sig också mellan stad och land, vad är lidande. Där stadsbon har en skulle jag säga, en mycket mera idealistisk bild av det här än vad den har som bor på landet. Som har djur och som ser djur i sitt dagliga liv. Vare sig det är vilda djur eller tama djur, om dom har gård eller liknande. De lever ju med djur på ett helt annat sätt. Så där kan vi inte ha någon strikt vetenskaplig definition inte."

⁶¹ In Swedish: "Om du är halt på alla fyra benen [av artroser] så måste du röra dig ändå men det går inte så bra."

⁶² In Swedish: "Ett benbrott på en get som väljer att gå på 3 ben läker alldeles utomordentligt, just genom att den kan gå på 3 ben. Och smärtan är den som hjälper, den håller benet så stilla så att frakturen stabiliseras. Medan ett djur som tvingas gå på det, en älg har mycket svårare att läka ut en fraktur."

⁶³ In Swedish: "Ordet lidande har jag väldigt svårt för att använda på djur. Jag lärde mig nog det utav min gamla mentor att det är väldigt svårt och uttala sig om lidande för djur. Det är mer ett begrepp i psykisk bemärkelse. Alltså människor kan ju lida. Om dina barn dör så har du ju ett

The explanation that suffering is taken for granted in the definitions is not the best explanation. The best explanation is that suffering is so difficult to define or examine that the informants define health, well-being and welfare in other terms.

Differences with regard to species and role

Let us now turn to the differences between different animals or between animals and humans. One informant claims that most of the concepts are applicable to the whole animal kingdom. There is in principle no difference in the definition of health or welfare with regard to humans as compared to animals. This informant wants "in principle" to be interpreted in a certain way. There is a general definition which needs to be adjusted to the particular animal and its capabilities.

If it is the differences in the individual, especially the design of the nervous system and differences in the mental functions [for well-being], that are important in this question, then the meaning of "well-being" varies. If it varies along an evolutionary scale, still the term "in principle" applies.

If health is that organs should function, if it is freedom from infectious diseases, then it is comparable of course. There I see no difference. But we can experience disturbances, an infectious disease may be experienced differently depending on my mental ability to understand the events. To understand what is happening and to understand that this will soon be over. It is all about expectations. And you may suppose that there are differences between species, between different levels of development.

If we say that welfare is about quality, it is a question of different kinds of technical qualities, food, fodder, opportunities to have contact with other individuals. Let us say, the living creatures that stem from different species seem to have different demands regarding temperature and moisture in the air. $(V6)^{64}$

otroligt psykiskt lidande över detta. Men djur har inte det begreppet, så lidande använder jag aldrig om djur. Däremot smärta och sjukdom."

⁶⁴ In Swedish: "Om det är så att det är dom individuella skillnaderna, framför allt nervsystemets uppbyggnad och skillnader i dom mentala funktionerna [för välbefinnande], som är viktigt i den här frågan, så varierar betydelsen av välbefinnande. Varierar det mellan olika arter t.ex. längs en utvecklingsstege, så är det väl kanske så att det där ordet "i princip" fortfarande gäller.

Om hälsan är att organsystemen skall fungera, om det är frihet från infektionssjukdomar, då är det ju jämförbart givetvis. Så att där kan jag inte se någon skillnad. Men vi kan ju uppleva störningar i detta, en infektionssjukdom kan ju upplevas olika beroende på min mentala förmåga att förstå vad som händer. Förstå dels vad som händer och också kanske att förstå att det här snart är över. T.ex.

With this introduction, let us now turn to the different concepts and look for similarities and differences.

SPECIES ASPECTS OF HEALTH

One view is that there is no crucial difference in the concept of health for different species of animals. Health is dependent on the amount of food, quality of food, protection and climate. Another view is that there is a difference. Mental health differs in the animal kingdom. One informant wants more mental health to be fulfilled for a horse or a dog than for a pig. A bee hardly has mental health.

I put mental health in another position for a dog or a horse. Maybe it's because you experience these animals in a different way because we use them as we do. We have the pig to be eaten. And that is a conflict to think about, because the pig is a very intelligent animal. (V3)⁶⁵

Some informants claim that there is no difference in the concept of health for humans and for animals. This was true whether the concept contained mental health or not. Those in favour of a difference between animals and humans argued that some aspects of mental health are not evident in animals. The animal has no understanding of the disease like humans have. This means that the animal is unaware of having a disease or which consequences it will have in the long run. Another aspect not evident in an animal is concern about the future.

Animals live in the moment, use their experience and have been nurtured in a specific environment. Humans have much more abstract experiences, are able to see into the future and have worries or create expectations. $(V7)^{66}$

Despite the fact that the informant V3 in the quotation above distinguishes between different animals with regard to mental health, the informant claims that the concept of health is similar in humans and animals. The differences are rather

det handlar ju om vad vi kan, förväntningar helt enkelt. Och där kan man ju återigen misstänka att det råder skillnader mellan arter, mellan olika utvecklingsnivåer.

Om vi säger att välfärd handlar om kvalité, det är olika typer av rent tekniska kvalitéer. Mat, foder, möjlighet till kontakter med andra individer. Alltså ska vi säga, den levande varelsen som kan komma från olika arter, tycks ha olika krav på vad som är rätt temperatur eller syn på vad som är rätt temperatur, rätt luftfuktighet."

⁶⁵ In Swedish: "Jag sätter nog den psykiska hälsan på ett annat sätt på en hund och en häst. Det är kanske för att man upplever dom djuren på ett annat sätt eftersom man använder dom som vi gör. Vi har grisen för att den ska ätas upp. Och det där är ju en konflikt som man kan fundera över, för grisen är ett väldigt intelligent djur."

⁶⁶ In Swedish: "Djur lever i nuet och utnyttjar erfarenheter och har fostrats i en viss miljö. Människor har så mycket mer abstrakta upplevelser och kan se in i framtiden och oroa sig eller skapa förväntningar."

in the treatment of the patients. By way of conclusion, to be able to use the same concept of health in the science of animal health and welfare as in the science of human health and welfare, the concept of mental health and a definition of mental health need to be accepted.

SPECIES ASPECTS OF WELL-BEING

Well-being can be ascribed to all animals, humans included, even though the needs and demands differ among species. The difference between humans and animals is that animals are content when their basic needs are fulfilled, a condition where most humans still will strive for something more.

Well-being may apply to all [animals]. I believe we often misjudge how capable animals are of mentally experiencing their situation. I do believe they do it fairly intensively. They enjoy or dislike. Even animals which we believe to be pretty non-smart have a feeling of well-being or not depending on whether their physiological needs are fulfilled or not. $(V2)^{67}$

Every animal has a need for contact with other animals or with human beings. $(V2)^{68}$

The demands may be described in the following terms:

Animals attain well-being more easily than humans. We have the same basic needs, we need food, we need warmth, an appropriate temperature around us so that we do not freeze to death. We want contact with the herd or a social life, we want a sexual life, animals also want that. And if they get these things they are pretty satisfied. But when humans get these things they want a larger place to live and a larger car and a larger boat and more power and more money and it never ends for some, there are always new goals. So, that's the difference with animals. They are often satisfied when the basic needs are satisfied. (V2)⁶⁹

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⁶⁷ In Swedish: "Välbefinnande gäller nog alla. Jag tror att man missbedömer ofta hur pass mentalt kapabla djuren är att uppleva sin situation. Det tror jag dom gör ganska intensivt. Dom trivs eller inte trivs. Även djur som vi tror är ganska osmarta, tror jag också har en känsla av välbefinnande eller icke välbefinnande, alltså om deras fysiologiska behov är tillfredsställda eller inte."

⁶⁸ In Swedish: "Alla djur har ju ett visst behov av kontakt med andra djur eller kontakt med mänskan."

⁶⁹ In Swedish: "Djur kommer nog till välbefinnande lättare än vad vi människor gör. Vi har ju samma basala behov, vi ska ha mat, vi ska ha värme, en lämplig temperatur runt omkring oss så vi inte fryser ihjäl. Vi vill ha kontakt med flocken eller ha ett socialt liv, vi vill ha ett sexuellt liv, det vill djuren också ha. Och får de dom här grejerna är dom nog ganska nöjda. Men har människan

Because of the close resemblance between well-being and welfare for some of the informants, see also Species aspects of welfare and Role aspects of the three concepts, below.

SPECIES ASPECTS OF WELFARE

One view is that all animals have welfare but the number of parameters needed to obtain differs, so that bees have only a few and social apes have many.

Some claim that there are different meanings of the concept of welfare for humans and animals respectively. There should be a difference in the definition of the concept of welfare concerning animals or humans, says one informant but the informant is unable to explain the difference. For this informant the ability to predict and have control is central to welfare and that is evident in both animals and humans. A distinction made by another informant is that welfare in humans is politically influenced and contains a good place to live, good school and good hospital care. Animals have no concept of welfare. Animals do not fully understand their life-situation and lack the ability to understand whether the level of welfare is high or low.

At the beginning of the interview one informant tries to define welfare as natural behaviour (just like this informant defines health). Later the informant changes track and claims that welfare is inapplicable to animals. Welfare is associated with material welfare in a human perspective. An animal probably has no desire for a sleeping place which has "the latest style".

The animals want their natural behaviour and we humans have perhaps lost our grip there sometimes in the industrialised world. We do not actually understand the meaning of the concept. $(V4)^{70}$

Welfare is therefore more used in the human area than in the animal area. Welfare is more linked to the technology in treating diseases and to how one lives. Humans have the opportunity to choose, which dogs lack. When I ask further, the informant is sure that the concept of welfare is only applicable to humans.

You seldom use those concepts concerning animals. No! It becomes too theoretical, ill-health and health, yes. But welfare or not. Consider a dog that has ill-health and the owner buys the latest model of car

fått allt det där så vill vi ju ha en större bostad och en större bil och en större båt och mera makt och mera pengar och det tar liksom aldrig slut för en del, det finns alltid nya mål. På det viset skiljer sig nog djuren. Dom är många gånger nöjda när dom här basala behoven är tillfredsställda." ⁷⁰ In Swedish: "Djuren vill mer ha sitt naturliga beteende och vi människor har kanske tappat fotfästet där ibland i I-världen. Så att vi inte riktigt förstår vad begreppets verkliga innebörd egentligen."

with air-conditioning to make life easier for this dog. And of course it is welfare for the dog, but it feels like the crucial aspect of welfare is material. That is maybe not the whole truth about the concept of welfare. In humans I believe you schedule more and more time for being with the family and your pets. But when it comes to animals it's all about health rather than welfare. For me welfare is more associated with humans, $(V4)^{71}$

There is another human aspect which is hard to avoid. For both humans and animals, humans decide what welfare (or well-being) is and there is a risk of using the human viewpoint when deciding about the animal's situation.

ROLE ASPECTS OF THE THREE CONCEPTS

No aspects of role were found in the discussion of the concept of health. For well-being one view among the veterinary surgeons is that well-being is applicable to all animals regardless of what role the animal has. The role that the animal has could be important for welfare. Among some of the informants welfare was not or hardly applicable to wild animals. Our responsibility to promote welfare concerns only animals that we have taken into our care. For animals in our care other rules are present than for wild animals, especially concerning death and causes of death. The reason is ethical: if we have taken animals into our care we have a responsibility for them.

It's a part of the natural process that some animals will not survive and starve to death. But we don't accept that in our pets or in the animals we have in our care. $(VT)^{72}$

Another way of looking at role differences is the following. Strong wild animals have welfare if no violent disturbances occur in the climate. Tame animals on the other hand have a high level of welfare due to being taken care of.

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⁷¹ In Swedish: "De begreppen använder man ju sällan när det gäller djuren. Neej! Det blir väldigt teoretiskt på nåt sätt, ohälsa och hälsa, ja. Men välfärd eller ej. Ta en hund som verkligen har ohälsa i botten från början, där djurägaren skaffade sig senaste modellen av bil med luftkonditionering och alltihopa för att det skulle bli lättare för hunden. Och det är klart att det är väl välfärd kanske för den hunden men. På nåt sätt känns det så att det är mycket materiellt som ligger i välfärd. På nåt sätt känns det för mig att det kanske inte är hela sanningen det här med välfärd. För människan tror jag att det blir mer och mer att man kanske ska avsätta tid för att bry sig om sin familj och sina husdjur. Men så fort jag tänker på djuren så blir det mer att det handlar om hälsa där då ändå än välfärd. Välfärd är för mig mera förknippat med människor."

⁷² In Swedish: "Det är ju en del av den naturliga processen att vissa djur inte klarar sig och svälter ihjäl. Men vi accepterar inte det på våra husdjur eller dom som vi har i vår vård."

DIFFERENT ANIMALS HAVE DIFFERENT WELFARE

One interesting conclusion is that the different views about the application of the concepts in the animal kingdom result in three different applications for the concept of welfare. The concept may apply to all animals, animals in human care or animals that have a certain level of mental abilities. A bee has welfare in the first and the second suggested sense, but not in the third. A wild beetle has welfare only in the first. A bird of prey has welfare in the first and the third sense, while a hen has it in all three senses. Even if one chooses a concept of welfare based on no differences, role or species differences have implications for how one will promote welfare. A welfare concept applicable to animals in human care makes us help the hen but not the goshawk chasing the hen. The same example but with a welfare concept applicable to all animals gives us a conflict regarding which bird to choose.

HOW MUCH INSIGHT INTO ROLE AND SPECIES DOES THIS STUDY ACHIEVE?

How should the claim that animals and humans are similar in relevant respects be analysed? Does one take into consideration the different characters of the different species? Those who claim that no crucial differences exist also claim that all animals are similar in important respects. One can ask if the informants' views are sufficiently thought through. If the traditional view that animals are to be equated with animals in human care (pets, cattle etc.) is evident to the informants, then their frame of reference is rather narrow. Veterinary surgeons treat mainly mammals and birds, species close to humans with regard to mental and social aspects. The choice of examples in the interviews ranged from only one kind of animal in more or less one role to several species and roles. The majority of the examples use mammals, with birds in second place. This means that a major part of the animal kingdom was left unconsidered. The roles of animals stretch from being totally under human control to being totally uncontrolled by humans, which indicates a broad view of the different roles that the animals have for humans. I consider that the aspect of role was well discussed, while the aspect of species was insufficiently discussed.

Conclusions

There were several suggestions for the definition of health and the suggestions were conceptually rich. Mental health can be ascribed to animals according to the informants. If the concept of health is to be the same in the science of animal health and welfare and in the science of human health and welfare, it is crucial to define mental health and it needs to be accepted.

The terms "welfare" and "well-being" may have separate meanings for some of the informants but for others one of the terms was improper for animals. If two terms are applicable, then both may need to be defined in the science of animal health and welfare. The reasons for not using one of the terms concern common language-use (welfare) or the informant's view of an animal's capacity to have a mental world. There seems to be a consensus with regard to natural behaviour as being important for well-being or welfare. The informants probably avoid suffering in their definitions of health, well-being or welfare because the concept of suffering is hard to define and it is hard to study animal suffering in a scientific way. These findings are summarised in Table 5.

Table 5. Summary of the empirical material of the interviews. The three approaches mentioned refer to the Three Broad Approaches (Duncan and Fraser 1997).

	Interviews	
Health	Rich discussion, several fruitful attempts to define the	
	concepts.	
Well-being	Evident for some informants, avoided by one informant.	
	Feelings central.	
Welfare	Avoided by some informants.	
	Approach (1) feelings and (3) naturalness, also the	
	approach of welfare as suitable environment and care.	
Relations between	Rich discussion on the relations between all concepts.	
the concepts	Unclear whether well-being or welfare should be used.	

All of the interviews were made during the period 2002-2004 (Table 3 in Chapter 3). During this period there was a relative consensus in the science of animal health and welfare (see Chapter 4). This period in the science of animal health and welfare is also known for the introduction of new concepts such as quality of life and wellness. Worth noting is that one informant spontaneously uses the concept of quality of life.

7. The three concepts in animal legislation

In this chapter I will present aspects of the concepts as they are evident in present legislation in England, Germany and Sweden, with the main focus on Swedish legislation. All these three countries belong to the European Community and the Council of Europe and have also signed international treaties (see Chapter 3 for a presentation of the different legal systems). Central to legislation is that different pieces of legislation refer to different animals and therefore this chapter adds further information on distinctions with regard to role or species. It needs to be kept in mind that most legislation is scattered and difficult to grasp completely. Often different pieces of legislation from different places in the hierarchy of norms should be compared. With regard to the concepts in this study the most important information is to be found in the central articles of acts.

In this Chapter I use a somewhat different structure than in Chapters 4 and 6. I present each legislative body with regard to its specific content and then offer a final discussion where I compare aspects of the concepts and their relations. This is done for better clarity because the material is more scattered than the other materials and there is also a lack of explicit definitions.

Historical and theoretical comments

QUALITY OF THE MATERIAL

The actual pieces of legislation in force on January 1 2008 together with important preparatory works and commentaries have been used for the philosophical analysis. Generally the main articles at the beginning of an act of primary legislation present the aim of that act. Subsequent (or secondary) legislation often follows the aim given in higher-order legislation. There has been a lack of explicit definitions of basic concepts both in the pieces of legislation and in the official documents such as preparatory works or explanatory notes. Therefore my analysis also needed to take account of implicit definitions.

HISTORY

Legislation about animals has developed over time with regard to two main areas: how animals are regarded and what the goal of human concern for animals should

be. The main view of what an animal is in all three countries has been that animals are the property of humans (Striwing 1998; Lorz and Metzger 1999; Radford 2001; Kluge 2002). Another possible position is that animals are regarded as having some kind of intrinsic worth and therefore are protected as fellow creatures. This idea has been adopted partly in Germany with a change in the Basic Law recently (2002) (Kluge 2002). In Sweden it has been discussed in preparatory works, but the position that animals have some intrinsic worth has no further support in legislation.⁷³

The first goal of human concern for animals that entered into modern legislation was that of avoiding cruelty towards animals. The first national laws created in democracies concerning cruelty came in 1822 in England (Radford 2001, p. 39), in 1838 in Sachsen (Lorz and Metzger 1999; Kluge 2002) and in 1857 in Sweden (Ekesbo 1997). Sachsen was at that time a nation in its own right. The first law concerning cruelty in the whole of Germany was introduced in 1871 (Lorz and Metzger 1999; Kluge 2002).

The next goal that gained importance was welfare. In Sweden, the first animal welfare act came in 1944 (Ekesbo 1997). In Swedish the main act is Djurskyddslagen, which literally means the animal protection act, but the act is officially translated as the Animal Welfare Act. A second one came into force in 1988 and it applied to all animals in human care (Prop 1987/88:93).⁷⁴ In Germany, the first animal welfare act (using the concept of well-being) came in 1933. In German the act is named "Tierschutzgesetz". Tierschutz literally means "animal protection" but the commonsense translation of the term is "animal welfare". The term "animal protection" implies more of a focus on human care than on the animal's own experiences or life-conditions. England had up to the end of 2006 a legislation based on the concept of cruelty, but recent amendments and acts talk about welfare. Most of the legislation in England was built on the Protection of Animals Act 1911 and its amendments. This act was the main one for domestic and captive animals, including farm animals (Radford 2001; DEFRA 2002). One main aim of the act was to make it an offence to cause unnecessary suffering or cruelty to an animal, where the focus was on cruelty. Interesting is

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⁷³ The Supreme Court of Sweden has stated that compensation for injury to a cat or dog may far exceed the actual economic value of the cat or dog (Supreme Court, NJA 2001:12). This is a sign that there is a tendency towards valuing animals more highly than merely goods.

⁷⁴ Section 4 stating that one should promote natural behaviour did not apply to all animals in human care at that time. In 1988 it only applied to farm and competing animals. Later laboratory animals were included (1998) and then all animals in captivity (2003) (Lidfors et al. 2005).

⁷⁵ Information from the interview with Rolf Krieger and Jörg Luy, Germany, September 15 2004.

⁷⁶ Jörg Luy in email, personal communication

that in the interpretation of the law the term "unnecessary suffering" and the adverb "cruelly" are interpreted as synonymous.

...it also gives rise to the question of whether the adverb 'cruelly' is to be interpreted differently from 'unnecessary suffering'.

The contention here is that it should not. (Radford 2001, p. 200)

The structure of the Protection of Animals Act 1911 allowed no secondary legislation (Radford 2001, p. 153), which meant that several other acts were brought into force to deal with new issues. During the years 1964-1965 there was a shift of emphasis from cruelty to welfare as a result of the book Animal Machines by Ruth Harrison (Harrison 1964) and the subsequent Brambell Committee (Brambell 1965). Tristead of being on human individuals acting cruelly, the focus was now on the whole production system. For example, in the Agriculture Miscellaneous Provisions Act 1968 a positive duty to guarantee the welfare of livestock was introduced (DEFRA 2004). The 1968 act came into being as a result of the findings of the 1965 Brambell Committee. 78 The Protection of Animals Act 1911 was regarded as partly outdated when it was replaced by the Animal Welfare Act 2006. The reason was that the formerly existing legislation only dealt with cruelty to animals, which is human-centred, and not welfare, which is animal-centred. As of 2007, when the act entered into force, animal welfare is a fundamental part of legislation besides protection against cruelty.

At the European level welfare has long been present but has gained further strength during recent years. When the Protocol on Animal Welfare (an amendment of the Treaty of Amsterdam) came into force on May 1 1999, animal welfare as a concept in European legislation was strengthened. The Treaty of Amsterdam is part of the constitution of the EC. For the first time in EC legislation animals are referred to as "sentient beings". Before the Treaty, the only two items of text mentioning animal welfare at the level of "basic law" for the EC were Article 30 of the EC Treaty (formerly Article 36) and the Declaration on the Welfare of Animals, the latter being an annex to the Treaty of the European Union and to be seen as a political document with minor legal effect. Article 30 makes it possible for Member States to restrict imports or exports in order to protect the health and life of animals, as long as the restrictions do not constitute arbitrary discrimination or disguised restrictions on trade (Camm and Bowles 2000).

The third goal entering into legislation is that animals should be treated as fellow creatures possessing intrinsic worth. One could then argue that those having

⁷⁷ Information given to me at DEFRA, January 31 2003.

⁷⁸ Donald Broom, personal communication.

intrinsic worth also have certain rights. By introducing the notion that animals are fellow creatures in the Basic Law Article 20a, Germany moves towards acknowledging the rights of animals. Despite the good intentions exhibited in the new Article 20a, the new view has not resulted in any practical changes. Also on the European level intrinsic worth is mentioned. The Convention on the Conservation of European Wildlife and Natural Habitats (1979) states that wild animals have intrinsic value.

Council of Europe

LAWS, ROLES AND SPECIES

Three of the conventions for animals in human care, written by the Council of Europe, express more or less explicitly general ideas about health and welfare. These are the European Convention for the Protection of Animals Kept for Farming Purposes (1976, abbr. Convention for Farm Animals, CETS No. 087), the European Convention for the Protection of Vertebrate Animals Used for Experimental and other Scientific Purposes (1986, abbr. Convention for Laboratory Animals, CETS No. 123) and the European Convention for the Protection of Pet Animals (1987, abbr. Convention for Pet Animals, CETS No. 125).

For wild animals there is the Convention on the Conservation of European Wildlife and Natural Habitats (1979, abbr. Convention on European Wildlife, CETS No. 104). The term "wild" in the Convention on European Wildlife is used so that "animals or plants stemming from bred or cultivated stocks" are excluded (Convention on European Wildlife Explanatory Report no 18). The Convention on European Wildlife protects two things, species and habitats. Habitats are lifegrounds for species. The species protected in the convention are those that are endangered or vulnerable (with a few exceptions), with an emphasis on migratory species (Convention on European Wildlife Article 1 Section 1). There are two levels of protection. The first is *strictly protected fauna species* and the second is protected fauna species. Strictly protected fauna species are all European bats with the exception of *Pipistrellus pipistrellus* (Convention on European Wildlife Explanatory Report no 77). Nearly all migratory songbirds are included despite the fact that not all are endangered or vulnerable (Convention on European Wildlife Explanatory Report no 79). The reason is the emphasis on migratory animals. Protected fauna species are some groups of vertebrates. There may be exceptions with regard to this protection in order to protect other flora and fauna, prevent serious damage, etc (Convention on European Wildlife Article 9). One example mentioned in the explanatory report is abatement of rabies (Convention on European Wildlife Explanatory Report no 39).

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⁷⁹ Interview with Rolf Krieger and Jörg Luy, Germany, September 15 2004.

HEALTH, WELL-BEING AND WELFARE

The main themes for welfare and health in the three conventions about animals in human care (Convention for Farm Animals, Convention for Laboratory Animals and Convention for Pet Animals) are:

- Physiological and ethological needs
- Suffering
- Abandonment

One main theme is that the animal's physiological and ethological needs should be met (Convention for Farm Animals) or that the restriction regarding the needs "shall be limited as far as practicable" (Convention for Laboratory Animals). The Convention for Farm Animals deals mainly with how housing conditions should be so that these needs can be met.

Suffering is another main theme and it is used in different ways.

- "The freedom of movement ... shall not be restricted ... [so as] to cause ... unnecessary suffering or injury" (Article 4) and "[c]ondition and state of health shall be thoroughly inspected at intervals sufficient to avoid unnecessary suffering" (Article 7). It is also stated in Article 6 that food or liquid causing unnecessary suffering shall be avoided. (Convention for Farm Animals)
- "The well being and state of health of animals shall be observed sufficiently closely and frequently to prevent pain or avoidable suffering, distress or lasting harm" (Article 5 section 1) and "any defect or suffering is [to be] corrected as quickly as possible" (Article 5 section 4). (Convention for Laboratory Animals)
- "Nobody shall cause a pet animal unnecessary pain, suffering or distress" (Article 3 section 1). (Convention for Pet Animals)

In the Convention for Farm Animals, which was written 10 years earlier than the other two, unnecessary suffering is linked to the health of the animal and perhaps unnecessary suffering may be interpreted as the result of bad health (presumably physical). In the other two conventions there is a link to mental experiences. There is a distinction between pain and suffering which indicates that pain is seen as something physical. The fact that more emphasis is put on the mental life of animals is also shown when the words "distress" and "harm" are used in the latter two conventions. This may well suit the development within animal welfare

science where research on mental abilities has gained importance since the early 80s

There is a difference between the Convention for Laboratory Animals and the other two. In the Convention for Laboratory Animals the term "avoidable suffering" is used and not the term "unnecessary suffering". There is also for lab animals another important aspect, namely time. There is an obligation to prevent "lasting harm" and correct defects "as quickly as possible". A third difference concerns the terms used. The terms "well being" and "state of health" are used in the Convention for Laboratory Animals in the section entitled "General care and accommodations" (Article 5). The terms "condition", "state of health" and "welfare" are used in the Convention for Farm Animals in the section entitled "Principles of animal welfare" (Articles 3-7). The term "welfare" is used in the Convention for Pet Animals in the section entitled "Basic principles for animal welfare" (Article 3).

A further theme is that pet animals should not be abandoned. In the other two conventions it is stated that humans should look after the animals as often as necessary. Abandonment is something else, something more. You can forget to do your walk in the laboratory checking the animals for injuries or suffering, but when you abandon an animal there is a deliberate decision. You *decide* to abandon.

For *the strictly protected fauna species* in the Convention on European Wildlife the following is prohibited:

- a) all forms of deliberate capture and keeping and deliberate killing;
- b) the deliberate damage to or destruction of breeding or resting sites;
- c) the deliberate disturbance of wild fauna, particularly during the period of breeding, rearing and hibernation, insofar as disturbance would be significant in relation to the objectives of this Convention;
- d) the deliberate destruction or taking of eggs from the wild or keeping these eggs even if empty;
- e) the possession of and internal trade in these animals, alive or dead, including stuffed animals and any readily recognisable part or derivative thereof, where this would contribute to the effectiveness of the provisions of this article. (Convention on European Wildlife Article 6)

A discussion of the consequences of implementing this Article in national legislation will be presented below with regard to the Swedish Protection of Species Ordinance (see Sweden, health and welfare). For section *d* a country may

make an exception for example in the case of egg collections for natural history museums (Convention on European Wildlife Explanatory Report no 32). *The protected fauna species* in the same convention are not so well protected as *the strictly protected ones*. Some exploitation may be allowed as long as the population level permits it (Convention on European Wildlife Explanatory Report no 80). The level needed is set in Article 2 as

... a level which corresponds in particular to ecological, scientific and cultural requirements, while taking account of economic and recreational requirements and the needs of sub species, varieties or forms at risk locally.

The European Community

LAWS, ROLES AND SPECIES

Article 30 (formerly 36) of the EC Treaty states that human, animal and plant health and life are more important than the free market.

Article 30

The provisions of Articles 28 and 29 shall not preclude prohibitions or restrictions on imports, exports or goods in transit justified on grounds of public morality, public policy or public security; the protection of health and life of humans, animals or plants; the protection of national treasures possessing artistic, historic or archaeological value; or the protection of industrial and commercial property. Such prohibitions or restrictions shall not, however, constitute a means of arbitrary discrimination or a disguised restriction on trade between Member States. (The Treaty Establishing the European Community)

Articles 28 and 29 prohibit quantitative restrictions on import or export between member states.

The Treaty of Amsterdam is part of the constitution of the EC. To the treaty there was added a Protocol on Animal Welfare, which should be seen as an integral part of the treaty. The protocol states:

THE HIGH CONTRACTING PARTIES

DESIRING to ensure improved protection and respect for the welfare of animals as sentient beings

HAVE AGREED upon the following provision which shall be annexed to the Treaty establishing the European Community.

In formulating and implementing the Community's agricultural, transport, internal market and research policies, the Community and the Member States shall pay full regard to the welfare requirements of animals, while respecting the legislative or administrative provisions and customs of the Member States relating in particular to religious rites, cultural traditions and regional heritage. (cited in Camm and Bowles (2000))

For the first time in EC legislation animals are referred to as "sentient beings". Unfortunately the term "animals" lacks a definition so one interpretation is all animals. Camm and Bowles (2000) also write:

The reference to animals as 'sentient beings' in the Protocol does not, of course, exclude the treatment of animals as goods or agricultural products in the other contexts.

The jurisdiction of the EC does not allow legislation for pet or companion animals (Radford 2001, p. 341). For wild animals the legislation is twofold, protecting species and habitats on the one hand and protecting animals from suffering on the other.

WELFARE

With regard to the Protocol on Animal Welfare, the process of legislation has to take "full regard" of animal welfare, which means that animal welfare becomes an important factor when different interests compete in the area of agricultural, transport, international market and research policies. However, it seems that animal welfare is an unimportant factor for conservation of the environment. The restriction in respect of full regard, namely "while respecting the legislative or administrative provisions and customs of the Member States relating in particular to religious rites, cultural traditions and regional heritage", may be a problem. Camm and Bowles (2000) claim that this was written for the protection of bullfighting and other customs. By claiming that a certain procedure involving animals is a religious rite, cultural tradition or regional heritage, it is still possible to disregard animal welfare. The protocol lacks a definition of welfare, which makes the interpretation difficult. There are a lot of definitions to choose from and depending on which definition you choose you get different results. Clearly stated in the Protocol, the implicit definition needs to recognise the mental life of animals as "sentient beings".

England

LAWS, ROLES AND SPECIES

The English Animal Welfare Act 2006 covers all vertebrate animals. If other animals than vertebrates are shown to be capable of suffering they can be covered in the act by secondary legislation. Some parts of the act refer to all vertebrates while other parts refer more specifically to the "protected animal". A "protected

animal" could be one of three, 1) normally domesticated in the British Isles, 2) either permanently or temporarily under a person's control, or 3) not living in a wild state. Regulation of fishing practices is not covered by the Animal Welfare Act 2006. Animals used in licensed laboratory work are covered by the Animals (Scientific Procedures) Act 1986.

England has not signed the Convention for Pet Animals and therefore has no legislation implementing the ideas of the convention. Central when it comes to companion animals is the Animal Welfare Act 2006 where welfare is promoted. A special section prohibits docking of dogs' tails for other than veterinary purposes or for certified working dogs. In England the roles for working dogs are 1) in law enforcement, 2) in Her Majesty's armed forces, 3) in emergency rescue, 4) in lawful pest control or 5) in the lawful shooting of animals (Animal Welfare Act 2006, Article 4(5)).

Wild mammals are covered in the Wild Mammals (Protection) Act 1996 which makes it an offence to be cruel to mammals. There is no general law regarding all wild species of animals making it an offence to be cruel to an animal or promoting welfare.

CRUELTY AND WELFARE

In the Wild Mammals (Protection) Act 1996 the emphasis is on cruelty. To be an offence there is a need for the action to be performed with the intention of causing unnecessary suffering. Exceptions from the law are when other legislation allows it, for example in the case of hunting with snares. Also if a person finds an animal severely disabled and then attempts to kill it, the action performed will not be regarded as cruelty because of the circumstances.

The Animal Welfare Act 2006 concerns both cruelty and welfare. The concept of cruelty is based on a duty to avoid unnecessary suffering in animals.

- (1) A person commits an offence if -
 - an act of his, or a failure of his to act, causes an animal to suffer.
 - (b) he knew or ought reasonably to have known, that the act, or failure to act, would have the effect or be likely to do so,
 - (c) the animal is a protected animal, and
 - (d) the suffering is unnecessary.
- (2) A person commits an offence if -
 - (a) he is responsible for an animal,

- an act, or failure to act, of another person causes the animal to suffer,
- (c) he permitted that to happen or failed to take such steps (whether by way of supervising the other person or otherwise) as were reasonable in all the circumstances to prevent that happening, and
- (d) the suffering is unnecessary (Animal Welfare Act 2006, Article 4(1-2))

Organised fighting where animals are involved regardless of species or role is prohibited.

The concept of welfare is based on a duty to care and defined as fulfilment of needs. There are certain needs of an animal that have to be met.

For the purposes of this Act, an animal's needs shall be taken to include –

- (a) its need for a suitable environment.
- (b) its need for a suitable diet.
- (c) its need to be able to exhibit normal behaviour patterns,
- (d) any need it has to be housed with, or apart from, other animals, and
- (e) its need to be protected from pain, suffering, injury and disease. (Animal Welfare Act 2006, Article 9(2))

One can clearly see the influence from the FAWC-adopted Five Freedoms (see Chapter 4). The differences are that (d) is introduced as a "new" need and the freedoms from pain, injury and disease and from fear and distress (in the above case "suffering") are combined in one need.

DEATH

The idea of prevention of suffering is not equal to safeguarding lives. Radford states that "the law is clear: it is permissible to kill an animal (excepting those particular species which benefit from statutory protection), provided it is not accompanied by unnecessary suffering" (Radford 2001, p. 244). To put an animal to death is not to be considered to be a welfare issue if it is not a result of inadequate treatment of the animal. In general, an owner is free to decide when to put an animal to death. There are at least three qualifications, however, Radford states.

 An animal must not be kept alive if it would suffer unnecessarily.

- If an animal has been severely injured, has contracted a disease or has by any other factor been put into a fatal state, the decision to put the animal to death can be taken by someone other than the owner.
- If an animal poses a threat to animal or human health or if public safety is endangered, the animal can be put to death. (Animal Health Act 1981, Dogs Act 1871)

Also some animals are protected by law against being killed (Radford 2001, p. 336).

Though the decision to kill mostly is up to the owner, it is a different situation when it comes to the actual killing. The way of killing an animal is in most cases regulated through "detailed requirements". When an animal is going to be slaughtered it is of importance that it becomes unconscious rapidly. Also suffering and distress should be minimised in handling the animal beforehand. To avoid unnecessary suffering and distress is in line with animal welfare laws in other areas. Excluded from this are animals killed during sporting events or hunting (Radford 2001). In the new Animal Welfare Act 2006, Article 27 deals with death as an interest of an animal in specific circumstances.

The court ... may order the destruction of an animal ... [if] it is appropriate to do so in the interests of the animal. (Animal Welfare Act 2006, Article 27)

Germany

LAWS, ROLES AND SPECIES

The German Animal Welfare Act from 1986 covers all wild, captive or domestic species of animals (Lorz and Metzger 1999). In the act there are articles about laboratory animals. Laboratory animals regarded as protected by legislation are vertebrates together with *Cephalopoda* and *Teuthida* from the evertebrates (*SOU* 2002:86).

HEALTH, WELL-BEING AND WELFARE

Article 1 in the German Animal Welfare Act reads:

The aim of this Act is to protect the lives and well-being of animals, based on the responsibility of human beings for their fellow creatures.

No person shall cause pain, suffering or harm to an animal without sound reason. (Animal Welfare Act (1986) Art $1.)^{80}$

Health is regarded as a part of the concept of well-being and therefore left unmentioned explicitly in the Animal Welfare Act (Kluge 2002, p. 91). The first and the second sentence differ in their focus. The first sentence describes something that is worth achieving, while the second sentence describes those matters that are not allowed.

The first sentence states that the main ethical framework for the law is "*Ethischer Tierschutz*" (literally "ethical animal protection") (Lorz and Metzger 1999; Kluge 2002). The main idea is that animals should not be seen as property but rather as fellow creatures. ⁸¹ This was strengthened in 2002 by the change in the Basic Law of Germany Article 20a.

Article 20a

The state, also in its responsibility for future generations, protects the natural foundations of life and the animals in the framework of the constitutional order, by legislation and, according to law and justice, by executive and judiciary. 82

Before August 1 2002 the article lacked the part referring to animals (Kluge 2002). This shows that animals have acquired a higher status.

At least two possible definitions of well-being are available. The first is a direct interpretation of the law. The second is a definition from one of the commentaries.

Def Well-being 6 = absence of pain, suffering and exposure to harm

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⁸⁰ Translated by Rolf Krieger. Interview with Rolf Krieger and Jörg Luy, Germany, September 15 2004. In German: "Zweck dieses Gesetzes ist es, aus der Verantwortung des Menschen für das Tier als Mitgeschöpf dessen Leben und Wohlbefinden zu schützen. Niemand darf einem Tier ohne vernünftigen Grund Schmerzen, Leiden oder Schäden zufügen."

⁸¹ In German: Mitgeschöpf.

⁸² Translated by Rolf Krieger. Interview with Rolf Krieger and Jörg Luy, Germany, September 15 2004. In German: "Der Staat schützt auch in Verantwortung für die künftigen Generationen die natürlichen Lebensgrundlagen und die Tiere im Rahmen der verfassungsmäßigen Ordnung durch die Gesetzgebung und nach Maßgabe von Gesetz und Recht durch die vollziehende Gewalt und die Rechtsprechung."

Def Well-being 7 = the state when the animal is in bodily and mental harmony with its environment (Lorz and Metzger 1999, p. 96)⁸³

Pain and suffering have to be avoided for an animal to have well-being (Lorz and Metzger 1999, p. 97; Kluge 2002, p. 91). In the light of the commentaries studied (Lorz and Metzger 1999; Kluge 2002, p. 99), the concept of pain in the legislation should be interpreted as corresponding to the definition of pain used by the International Association for the Study of Pain:

> An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.84

The animal will suffer when it experiences something which does not suit its instincts, 85 is life-threatening 86 or otherwise has a negative effect on its well-being (Kluge 2002, p. 92). Suffering is shown as stereotypies or other functional disorders (Kluge 2002, p. 93).

Harm⁸⁷ (see quotation above) is the result when the animal's physical or mental condition is made worse by some external intrusion. There is no demand that this bad condition should last for a long time (Lorz and Metzger 1999; Kluge 2002). Examples of it may be abnormal changes in weight or psychoses (Lorz and Metzger 1999, p. 108). Kluge (2002, p. 91) considers that although bodily integrity is unmentioned it follows from the connection between sentences 1 and 2 and the goal of preventing injuries.

The term "sound reason" (see quotation above) appears in more pieces of legislation than the Animal Welfare Act. The idea of "sound reason" is also found in legislation about protection of species (Artenschutzrecht in Bundesnaturgesetz) (Lorz and Metzger 1999, p. 109). The term "sound reason" identifies how to value an action towards the animal. If the reason is sound, then it is permissible to cause the animal pain, suffering or harm. One is not allowed to kill a vertebrate animal unless one has a sound reason. For Kluge (2002), a reason is sound if it is in line with the view of society.⁸⁸

⁸³ In German: "Wohlbefinden ist der Zustand körperlicher und seelischer Harmonie des Tiers in sich und mit der Umwelt."

⁸⁴ http://www.iasp-pain.org/terms-p.html#Pain, March 29 2005

⁸⁵ In German: instinktwidrig.

⁸⁶ In German: lebensfeindlich.

⁸⁷ In German: Schaden.

⁸⁸ Kluge writes in German Sicht der Allgemeinheit (Kluge 2002).

In Article 2 of the Animal Welfare Act the term "species-specific" is introduced.⁸⁹

Any person keeping, caring for or required to care for an animal:

- 1. must provide the animal with food, care and housing appropriate to its species, its requirements and behaviour;
- 2. may not restrict the animal's possibility of species-specific freedom of movement to such an extent as to cause the animal pain or avoidable suffering or harm:
- 3. must possess the knowledge and skills necessary for providing the animal with adequate food, care and housing in accordance with its behavioural requirements. (Animal Welfare Act (1998) Art 2.)⁹⁰

This article implies that different species have different needs when it comes to being housed. Also it implies that the restriction of the species-specific behaviour can cause pain, suffering or harm.

Sweden

LAWS, ROLES AND SPECIES

In Sweden the Penal Code deals with cruelty and is applied to all animals regardless of role or species. The Animal Welfare Act applies to all animals that are held indoors or in outdoor enclosures. It also applies to all animals that are subject to scientific experiments, even if the animals are still in the wild. The regulations in the Animal Welfare Act about experiments on animals are the implementation of the Convention for Laboratory Animals.

When it comes to wild animals there are three important laws, the Environmental Code (SFS 1998:808) with its Protection of Species Ordinance (SFS 1998:179), the Hunting Act⁹¹ (SFS 1987:259) with its ordinance (SFS 1987:905) and the ordinance concerning fishing⁹² (SFS 1994: 1716). The Hunting Act applies to all wild mammals and birds (Article 2) and deals with hunting issues (Article 1). The

⁹⁰ Translated by Rolf Krieger. Interview with Rolf Krieger and Jörg Luy, Germany, November 15 2004. In German: "Wer ein Tier hält, betreut oder zu betreuen hat,

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⁸⁹ This Article was revised during 1998.

^{1.} muss das Tier seiner Art und seinen Bedürfnissen entsprechend angemessen ernähren, pflegen und verhaltensgerecht unterbringen,

^{2.} darf die Möglichkeit des Tieres zu artgemäßer Bewegung nicht so einschränken, dass ihm Schmerzen oder vermeidbare Leiden oder Schäden zugefügt werden,

^{3.} muss über die für eine angemessene Ernährung, Pflege und verhaltensgerechte Unterbringung des Tieres erforderlichen Kenntnisse und Fähigkeiten verfügen."

⁹¹ In Swedish: Jaktlagen.

⁹² In Swedish: Förordningen om fisket, vattenbruket och fiskerinäringen.

ordinance concerning fishing applies to fishes and crustaceans both in the wild and in fish farms. This piece of legislation lacks a general view of welfare, well-being or health. Therefore I will not review it below. The Protection of Species Ordinance deals with wild animals. The Protection of Species Ordinance Article applies to all birds, most mammals, lizards, snakes and frogs, and some fish, beetles and shellfish (together with some species from other genera). The regulations cover all ages of an animal's life. Part of the Protection of Species Ordinance stems from the Convention on European Wildlife through EC legislation.

In the case of some animals their health and welfare is not considered at all. This holds for animals which are dangerous to plants. Rather, with regard to the Protection of Plants Act (SFS 1972:318)⁹³ and its secondary legislation, they should be kept outside the borders of the nation. The reason is that they are dangerous to plants that grow in Sweden. If there is huge threat eradication programmes are allowed (Protection of Plants Act). The animals concerned are some insects and some other invertebrates (SJVFS 2005:3).

CRUELTY

The Swedish Penal Code deals with crimes and sets the limits for the different punishments. In Chapter 13 Article 8, it is stated that a human is not allowed to cause danger to animals or plants. Danger is constituted by, for instance, poisoning the environment or spreading disease.

In the Penal Code cruelty to animals is forbidden.

A person who, with intent or through gross carelessness, by maltreating, overworking, neglecting or in some other way unjustifiably exposes an animal to suffering, shall be sentenced for *cruelty to animals* to a fine or imprisonment for at most two years. (Penal Code, Chapter 16 Article 13)⁹⁴

The Article about cruelty to animals is to be found under the heading "Crimes against public order". ⁹⁵ The Penal Code also prohibits cruelty towards animals or humans on film. For example it is prohibited to distribute still pictures or movies that show extreme violence towards animals or humans, unless they have been approved by the National Board of Film Censors (Chapter 16 Article 10b-c). To criminalise cruelty to animals is thus primarily a way to protect humans from the

⁹³ In Swedish: Växtskyddslagen.

⁹⁴ In Swedish: "13 § Om någon uppsåtligen eller av grov oaktsamhet, genom misshandel, överansträngning eller vanvård eller på annat sätt, otillbörligen utsätter djur för lidande, dömes för djurplågeri till böter eller fängelse i högst två år. Lag (1972:629)."

⁹⁵ Chapter 16 in the Penal Code.

experience of persons with vicious habits (Striwing 1998). 6 Only secondarily is it a way of protecting animals.

HEALTH AND WELFARE

The Animal Welfare Act contains two important articles (Article 2 and Article 4) concerning the concepts of health and welfare. I will first analyse each of them and then compare them.

Article 2

- (1) Animals should be treated well and shall be protected from unnecessary suffering and disease.
- (2) Animals used for the purposes referred to in section 19 shall not be deemed to have been subjected to unnecessary suffering and disease where such use has been approved by an ethical committee on animal experiments, (Animal Welfare Act)97

There are three main ideas in Article 2: that the animals should be treated well, be protected from unnecessary suffering and be protected from disease. It is important to note that the legislator differentiates between disease and suffering. This means that the animals should be protected from disease even if the disease does not cause suffering for the animal (Prop 1987/88:93). If an animal has a disease or is hurt it should have immediate care (Article 9). Within the term "suffering" the legislator encompasses both physical and mental suffering. Mental suffering may for example be anxiety. As unnecessary suffering everything counts which is not caused by diagnosis or therapy of diseased animals or those treatments for laboratory animals which are allowed (Prop 1987/88: 93). Striwing (1998) states that suffering in Swedish jurisdiction is defined as "something more than a pain which has a minor intensity and duration"98 (as defined in Prop 1965:138 p. 14 and *Prop* 1972:122 p. 10.). This definition sets the level for what is to be regarded as suffering. Even if an owner does not cause unnecessary suffering and protects the animal from disease, he or she may still break the law by not treating the animal well (*Prop* 1987/88: 93).

Even though suffering is mentioned in both the Penal Code and the Animal Welfare Act there is a difference in the interpretation of the concept between the

⁹⁶ Note here that the Penal Code is a 19th-century law. The view that cruelty to animals is bad

behaviour is in philosophy discussed by Immanuel Kant (1724-1804). He holds the view that if a human maltreats an animal, that human can in the future also maltreat humans. 97 In Swedish: "2 § Djur skall behandlas väl och skyddas mot onödigt lidande och sjukdom.

Djur som används i djurförsök skall inte anses vara utsatta för onödigt lidande eller sjukdom vid användningen, om denna har godkänts av en djurförsöksetisk nämnd. Lag (2005:1226)."

⁹⁸ In Swedish: "Plåga som inte haft en blott obetydlig intensitet och varaktighet."

two. For there to be an offence that may be penalised with regard to the Penal Code the animal needs to suffer and the persecutor should have exhibited "gross carelessness", whereas with regard to the Animal Welfare Act no suffering is needed and only "carelessness" in order for the offence to be penalised (Striwing 1998). ⁹⁹

Some of the Articles in the act following this Article may be used as examples of not treating an animal well. Article 4 is seen as a more explicit way of presenting the ideas in Article 2 in a specific area of concern.

Article 4

Animals shall be accommodated and handled in an environment that is appropriate for animals and in such a way as to promote their health and permit natural behaviour. (Animal Welfare Act)¹⁰⁰

Unfortunately no definition of health is given in the preparatory works preceding the act or in the act itself. The term "welfare" is not mentioned in the act. Still there are two important interpretations of welfare outlined in the central Articles, namely avoiding unnecessary suffering (Article 2) and permitting natural behaviour (Article 4). When it comes to natural behaviour the preparatory works state that different animals have different behaviours and that this needs to be taken into account (*Prop* 1987/88:93). Natural behaviour is also echoed in the Animal Welfare Ordinance (secondary legislation to the Animal Welfare Act, SFS 1988:539), where it is stated that livestock buildings and other holding rooms should be built in such a way as to allow the animals to "behave naturally" (Jensen 1990).

What is natural behaviour according to the legislation? Per Jensen notes that the regulations existing in 1990 did not include all the natural behaviour of the animal (Jensen 1990). For example cows were allowed to be tied up during a large part of the year and piglets could be separated months before the natural time for separation. Jensen points out that the Swedish word *möjlighet* (possibility) in Article 4 gives the opportunity only to focus on those behaviours that are necessary in a certain situation. Therefore a certain environment need not fulfil all the requirements for the whole repertoire of behaviour in an animal. But the law does not allow places for animals where unnatural behaviours arise (Jensen 1990).

⁹⁹ "Gross carelessness" is *grov oaktsamhet* in Swedish and "carelessness" is *oaktsamhet*. See the quotation from the Penal Code Chapter 16 Article 13 above.

¹⁰⁰ In Swedish: "4 § Djur skall hållas och skötas i en god djurmiljö och på ett sådant sätt att det främjar deras hälsa och ger dem möjlighet att bete sig naturligt."

Other examples, besides Jensen's, from other legislation are the following. The Animal Welfare Ordinance Article 19 does not allow dogs to be bred that have an extremely strong fighting spirit, are easy to tease so that the dog bites, or are difficult to stop when they are attacking and/or direct their fighting spirit towards humans or other dogs. In the Hunting Act (1987:259) dogs are not allowed to run free in the countryside during the period March 1 to August 20. Dogs are also not allowed to track down prey if they are not used in hunting. When a dog is sold it is not permissible to use the label "hybrid with wolf" or in any other way imply that the dog has a predator-like behaviour (Protection of Species Ordinance, Article 11, my translation). One can argue that there is a tension between the Animal Welfare Law, which promotes natural behaviour such as hunting or running loose, and the Hunting Act, which prohibits the same. Also, the Protection of Species Ordinance prohibits breeds of dogs that have predator-like behaviour.

What happens if we compare Article 2 and Article 4 of the Animal Welfare Act? The preparatory work (*Prop* 1987/88:93) does not give any guidance other than indicating that Article 4 is, in principle, a more precise way of putting Article 2 into a specific context. Let us now look at the two Articles again in the light of this.

Animals **should be treated well** and shall be *protected from unnecessary suffering* and disease.(Article 2)

Animals **shall be accommodated and handled in an environment that is appropriate for animals** and in such a way as *to* <u>promote their</u> health and *permit natural behaviour*. (Article 4)

If Article 4 is a more precise way of presenting Article 2 then "accommodated and handled in an environment that is appropriate" is more precise than "treated well". The fact that appropriate accommodation and handling promotes or is a part of a good treatment is obvious, but with regard to the other two aspects it seems hard to defend that Article 4 is more precise than Article 2. In particular, promoting health could be seen as a more general term than protecting disease.

In other Articles there are other examples of how to treat animals. Animals should have sufficient food and water. Shelters should have sufficient space and be kept clean. Animals are not to be overworked. Freedom of movement is regarded as important in Article 6 of the Animal Welfare Act.

Animals must not be tied or tethered in a way that causes pain or does not allow them the necessary freedom of movement or rest or sufficient shelter from the elements. ¹⁰¹

There is also an endpoint in the worst scenario. If the level of welfare is too low and there is too much suffering for the attainment of an acceptable level, the animal should be killed immediately (Animal Welfare Act, Article 30).

For all animal experimentation in Sweden the following requirements are to be fulfilled. If other available methods without using animals exist they should be used. The fewer animals used the better. The animals involved should not be exposed to more suffering than necessary. Only animals bred for experimentation purposes are allowed. In the legislation there are still differences due to consideration of the species. For invertebrates no additional rules exist. When it comes to the use of vertebrates special permission is needed from an animal ethics committee that weighs the suffering of the animals against the benefits from the research. The families *Pongidae* and *Hylobathidae* within the primates possess special protection. Behavioural studies are allowed but no physical intrusions such as pricking with needles or physical restrictions (tvångsanordning). One case of role consideration exists. The only studies allowed on endangered wild species are those that are directed towards preserving the wild species in question (Wendel and Lerner 2008). 102

It seems that the idea of minimising unnecessary suffering is more important than the idea of natural behaviour when it comes to laboratory animals. The well-being of the animal is central in one of the regulations for animal experimentation. Wellbeing is divided into physical and mental well-being in the legislation. Well-being implies avoidance of suffering or permanent injury (bestående men). The concept of suffering is related to other concepts such as pain, anxiety or discomfort. In different sections these relations differ somewhat. In Article 53 of the Animal Welfare Act suffering seems to be overarching the other concepts, but at other places in the act another order of the concepts is present. Typical of the latter way of presenting the concepts is that two or three concepts are enumerated with "pain" as the initial term followed by "anxiety or other similar suffering" or "discomfort or other similar suffering". "Other similar suffering" could here be interpreted in two distinctive ways, either as referring to "similar with regard to anxiety" or "similar with regard to discomfort" or as referring to "similar with regard to pain and discomfort". One

¹⁰¹ In Swedish: "6 § Djur får inte hållas bundna på ett för djuren plågsamt sätt eller så att de inte kan få behövlig rörelsefrihet eller vila eller tillräckligt skydd mot väder och vind."

¹⁰² For a comparison of Swedish legislation concerning humans and animals in research see Wendel and Lerner (2008).

passage indicates that pain is not a part of the concept of suffering. Obvious is that discomfort and anxiety are subordinate to suffering. These two concepts differ in degree. The special committee that must approve an experiment focuses on two aspects: whether the research will give us important information and how much the animals will suffer (Animal Welfare Act Article 2, 19; Animal Welfare Ordinance Article 49). Natural behaviour only counts when a prohibition of it causes suffering. The integrity of the animal is not discussed, while integrity as a concept is important in the legislation for humans (Wendel and Lerner 2008).

As a general rule in the Hunting Act and the Hunting Ordinance wild animals in the groups of birds or mammals are not allowed to be hunted unless the Act or the Ordinance allows it. Article 4 of the Hunting Act states:

Wild animals should be cared for in order to

- Protect the species that are a part of the country's wild animals
- Promote an appropriate development of the species, with regard to general or specific interests. ¹⁰³

Examples of this care for wild animals may be extra food during winter or careful planning of logging or road-building so that the different species may continue existing and thrive. The goal is to achieve strong and vigorous populations of animals (*Prop* 1986/87: 58, p. 68). Animal protection is an important issue even in hunting and therefore a crucial Article in the law states that the wild animals shall not be subjected to unnecessary suffering during hunting (Article 27).

Wild species permissible to hunt are often protected for a period of the year. As a rule animals must not be killed during the breeding season and at the beginning of the feeding period of the young. In the hunting of elk there are also regulations with regard to the sex or age of individuals that it is permissible to hunt. This is in line with the idea of strong and vigorous populations. There are exceptions where you can get permission to shoot even protected animals. Examples are diseases (scabies in fox), loss of property or income (geese on fields), sanitary problems (gulls on dumps or jackdaws in town centres) or danger to human life (wolves showing behaviour that indicates mixed breeding with dogs).

In order to save animals that may become extinct there is a regulation in the Hunting Act saying that some species are "owned" by the state and a citizen is not allowed to kill or have possession of a member of the species if he or she does not

¹⁰³ In Swedish: "4 § Viltet skall vårdas i syfte att

⁻ bevara de viltarter som tillhör landets viltbestånd och de fågelarter som tillfälligt förekommer naturligt i landet, och

⁻ främja en med hänsyn till allmänna och enskilda intressen lämplig utveckling av viltstammarna."

have permission (Hunting Act Article 25). Species protected are, for example, birds of prey, some other endangered birds, the big mammal predators and some other mammals (Hunting Ordinance Article 33).

The key Article in the Protection of Species Ordinance is the first one.

- 1a Regarding wild birds and those wild animal species which are marked with N or n in the appendix it is forbidden to
- 1. purposely catch or kill animals
- 2. purposely disturb animals, especially during the animals' periods of mating, caring for the young, over-wintering and migration
- 3. purposely destroy or collect eggs in the wild
- 4. purposely harm or destroy the animals' places for mating or rest. 104

Exceptions to Article 1 are for example if there is a risk of severe damage to crops or for the purpose of research (Article 1f). In the Protection of Species Ordinance it is stated that it is not allowed to catch or kill wild animals if the Hunting Act and the Hunting Ordinance do not permit this. Note that the two latter pieces of legislation only apply to mammals and birds. For fish there are regulations for catching and killing in the ordinance about fishing. The Protection of Species Ordinance states that animals should not be disturbed during crucial phases of their lives (cf. the Convention on European Wildlife). A bird may be protected from human interaction during almost its entire life depending on how one interprets Article 1a Section 2. Human beings may also be restricted in their way of living their life as a consequence of the law. Forests are not to be logged if capercaillies have leks there. Geese are not to be scared while they are resting in southern Sweden (which is almost the whole period from August to April), unless scaring or hunting is permitted by the Hunting Act for the purpose of preventing major economic loss. Farming may perhaps not be done during the breeding season because of the risk of destroying nests of lapwings or corncrakes.

With regard to the regulations that the Environmental Protection Board has established in accordance with the Protection of Species Ordinance, one is still

¹⁰⁴ In Swedish: "1 a § I fråga om vilda fåglar och i fråga om sådana vilt levande djurarter som i bilagan till denna förordning har markerats med N eller n är det förbjudet att

^{1.} avsiktligt fånga eller döda djur,

^{2.} avsiktligt störa djur, särskilt under djurens parnings-, uppfödnings-, övervintrings- och flyttningsperioder,

^{3.} avsiktligt förstöra eller samla in ägg i naturen,

^{4.} skada eller förstöra djurens fortplantningsområden eller viloplatser. Förbudet gäller alla levnadsstadier hos djuren."

allowed to catch certain species of those mentioned above for a short while for the purpose of studying them, provided that one returns them to their natural surroundings. In the case of the common adder one is allowed to remove it from the surroundings of houses. This is comparable with the Hunting Ordinance where birds and their nests can be removed if they do serious damage or cause inconvenience close to buildings. This holds even if the species is protected (Hunting Ordinance, Appendix 4, 19).

Discussion

Here I will summarise the results presented above, also interpret and discuss some important issues starting with role and species. Thereafter I will continue with the different concepts and their relations. A summary of the material in this chapter is provided in Table 6 at the end of this chapter.

ROLES AND SPECIES

In legislation the main approach is by way of role rather than species. With regard to roles separate pieces of legislation have been established with regard to farm animals, pet animals, laboratory animals, wild animals and pests. Sweden has for example a Hunting Act regulating human interference with wild animals ¹⁰⁵ and an Animal Welfare Act regulating human interference with animals in human care. Both these pieces of legislation hold for all animals in a certain role (even if the role is wide as in the case of animals in human care). Belonging to a certain species plays a secondary role. Often regulations appended to the acts apply to different species. For example, there are different box sizes for cows and horses, and the families *Pongidae* and *Hylobathidae* have certain extra protection in the regulations about laboratory experiments. In England some acts focus primarily on species, such as the Wild Mammals (Protection) Act 1996.

Most of the legislation mentioned in this text concerns birds and mammals. These are animals that are close to humans genetically, and some species have been domesticated and are now in use in a variety of roles. After mammals and birds, other vertebrates follow and finally other species. It is striking that such a diverse group as the insects with maybe half of all the species in the world is only covered marginally by the legislation.

It is obvious that there is a great divide between the role of wild animals and the wide role of animals in human care. In the case of wild animals legislation covers such issues as hunting, fishing and protection of species. Animals that are not wild

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Note that the Hunting Act only covers mammals and birds. This may not be a result of a species approach because traditionally animals in the role of being hunted for food are mainly mammals or birds.

are protected by "animal welfare" acts. There is also another important distinction between legislation concerning wild animals and legislation concerning animals in human care with regard to the species or the individual. Legislation concerning wild animals focuses mostly on the species level even if there are aspects regarding the individual. The species may be protected and possible health or welfare aspects are connected to the future of the species. For example in the Swedish Hunting Act it is stated that there should be strong and vigorous strains of different animal species. In practice this means for example providing food for animals during severe winters. In legislation about hunting there is an individual approach when it comes to ways of hunting or disturbing animals, where some methods may be considered cruel or as causing the animal too much suffering. Also in the Swedish concept of viltvård (care of wild animals) there is an idea of helping wild animals with food during severe winters. This is a way of interacting in the same way as with animals in human care. 106 Legislation concerning tame and captive animals is more individual-centred, where aspects of health and welfare are connected to the future of the individual. Secondary are speciesspecific measurements or regulations, which shows that also in legislation concerning tame and captive animals there is a species approach.

In the Swedish Protection of Species Ordinance different species are protected. In that ordinance also another issue is taken up which is related to the individual/species level, namely that humans should not interact with wild species, at least not in the sense of disturbing the animals. What disturbs a wild animal? Can there be a conflict between the Hunting Act and the Protection of Species Ordinance? Is a roe deer disturbed when it is extra fed? Giving extra food helps animals which would not have survived, nevertheless giving extra food makes an animal closer to the wide role of being in human care.

Different species within the same group of animals may be covered by different legislation, which may result in different welfare concepts. In the group of mammals a dog as a pet, a cow producing milk and an elk living in the wild are covered by different legislation imposing different aspects of welfare. If we turn to insects in Swedish legislation the following different aspects of welfare can be suggested. Let us first look at bees. I am suggesting that bees may be covered by the Animal Welfare Act even though the act in most cases only deals with vertebrates. Humans keep bees for their honey and bees are highly social animals with a faculty of communication which may indicate some cognitive ability (Gould and Gould 1994). Hence important criteria for applying the act seem to be fulfilled. Then, with regard to the Animal Welfare Act, bees should be treated so

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¹⁰⁶ Here it is a question whether they are in a wild role or not (see Chapter 9, Welfare as suitable environment and care, for a discussion of different "wild" roles).

that they are kept free from disease and unnecessary suffering and can express their natural behaviour. *Osmoderma eremita* is an endangered insect living in oaks. This animal lives in the wild and therefore humans should not disturb it, this as in line with the Protection of Species Ordinance. It should be allowed to live freely. For another insect, *Leptinotarsa decemlineata*, the situation is different. It is a pest on potatoes and not to be tolerated in Sweden in line with the secondary legislation accompanying the Protection of Plants Act, so if it is found it should be collected and eradicated.

HEALTH

Health is mentioned in some legislation (the Swedish Animal Welfare Act Article 4 and the Convention for Farm Animals), but the existing legislation and the accompanying comments do not give much information about how to interpret the concept of health. The Swedish Animal Welfare Act stipulates that health should be promoted and disease avoided, but no definitions of the concepts are provided in preparatory works. One way of interpreting Article 2 and Article 4 of the act indicates that "promot[ing] health" should be interpreted as the way to "protect from disease".

WELL-BEING/WELFARE

When it comes to welfare and well-being there are several aspects mentioned in various pieces of legislation.

- Protection from cruelty
- Protection from suffering
- Natural behaviour
- Protection from abandonment
- Freedom from interference

I will here discuss each of these aspects.

PROTECTION FROM CRUELTY

Cruelty as a legal offence is defined in somewhat narrower terms than might be expected. There are treatments which may be regarded as cruel but which are allowed according to the regulations and are not cruel in the legal sense of an offence of cruelty. An example of this in Sweden is castration of young pigs without anaesthesia, which is in line with the regulation but still may be considered cruel by a lay person. To be an offence, cruelty often needs a particular kind of intention on the part of the actor or lack of a caring intention towards the animal. The offences of cruelty have in England no application to wild animals with the exception of mammals (Wild Mammals (Protection) Act 1996). In Sweden cruelty has application to wild, captive and domestic animals.

But is protection from cruelty really an aspect of the welfare concept? The concept of cruelty focuses more on the actor than on the subject. To protect from cruelty only means that the animal should not experience such acts. But what is it that the animal should not experience? In the present English legislation, cruelty could be translated into unnecessary suffering. In both England and Sweden cruelty is an action or omission causing the animal suffering. The intention of the actor is of no significance with regard to the concept of welfare. The results in the animal of the act relate to welfare or well-being. If only suffering occurs from a cruel action there is no need to consider protection from cruelty as an important factor in welfare. If on the other hand no suffering occurs but the animal is harmed in some other way then one may need to consider protection from cruelty as an important factor in welfare. For example, cruel actions could damage an animal's integrity or intrinsic value even if no suffering occurs. In Sweden and England there is no concept of animal integrity in the legislation, whereas some legislation internationally and in Germany recognises intrinsic value. The Convention on European Wildlife states that wild animals have intrinsic value and the German Animal Welfare Act states that all animals have intrinsic value.

PROTECTION FROM SUFFERING

Animals are recognised as beings with feelings in the main body of legislation today. This is true of the Treaty of Amsterdam, of the later conventions of the Council of Europe and of the key Articles in the legislation in England, Germany and Sweden. The problem is to determine *which* animals. Camm and Bowles (2000) interpret the EC law as referring to all species. The German Animal Welfare Act also covers all species. A problem with this approach is of course the biological question of what animals can suffer. When we say that other animals suffer we build that argument on analogy. Structures (for example a spinal cord placed dorsally, similar brain regions), physiology and behaviour similar to those of humans are indications that these animals can suffer. When it comes to animals with a ventrally placed nervous system, such as insects, we are not so sure. Still, with regard to recent research crayfish are said to have memory of unpleasant experiences. My point is that maybe the legislation casts its net too wide in its aim of protecting all species. This is of course a matter of how the legislation defines suffering, and I will now turn to that.

Let me compare the important acts concerning captive and domesticated animals in the different countries. The term "suffering" is prominent in all the three countries. In England you should not cause a protected animal unnecessary suffering and the legislation focuses on the action done or the omission of an action vis-à-vis the animal. The term "unnecessary suffering" is still in English legislation closely connected with the concept of "cruelty", which is not the case

in Swedish legislation. Swedish legislation also has the term "unnecessary suffering" but it stands for something else than cruelty. It has a wider scope. The concept of cruelty (in the Penal Code) in Sweden is often linked with a more clear purpose behind the action. Germany, on the other hand, lacks the term "unnecessary". In Germany the amount of suffering can be quite large if the actor has a sound reason. Suffering is regarded as both physical and mental (such as anxiety).

NATURAL BEHAVIOUR

Both Germany and Sweden refer to species-specific behaviour or natural behaviour (in the British Animal Welfare Act the term is "normal behaviour"). The German Animal Welfare Act talks about species-specific behaviour. Article 2 implies that different species have different needs when it comes to being housed. Also it states that restriction of the species-specific behaviour can cause pain, suffering or harm. In Germany species-specific behaviour is more related to what humans provide for the animal and to the fact that an animal should be free. In Sweden natural behaviour is more animal-centred, where the animal's entire natural behaviour should be permitted. We have seen that the idea of natural behaviour is problematic in Swedish law. The Animal Welfare Act stipulates that animals shall be able to perform natural behaviour while the Hunting Act and the Protection of Species Ordinance prevent it in dogs. Unfortunately no definition is offered in the preparatory works. Suggestions have been made by several researchers within the science of animal health and welfare (Algers 1990; Jensen 1990; Algers 2001; Lidfors et al. 2005; Malm 2004) and these will be discussed at length in Chapter 7.

PROTECTION FROM ABANDONMENT

Is abandonment an important concept in the talk about welfare? This term was mentioned to denote one of the aspects of welfare in the Convention for Pet Animals. In its simplest form abandonment may be bad only because animals are regarded as property and humans should be responsible for their property. For example, sheep that have been killed by a dog have to be compensated for. If the dog was a stray dog, who would then compensate for the animals? An interpretation in this way has nothing to do with welfare, but there may be interpretations of the protection of abandonment which relate to welfare.

Let us have in mind two examples, a dog that is abandoned in a flat for a couple of days and a cat that is left at a summer cottage when the family leaves for town. Two arguments present themselves using these two examples. One may argue that the protection from abandonment is only a way to minimise suffering. Therefore the crucial aspect for welfare is suffering rather than abandonment. This may hold true for both the examples. The animal will suffer if no one takes care of it.

Another argument concerns abandonment and natural behaviour. The dog, as a social animal in a certain sense, sees the human as the leader of his social group, which a cat may not. When a human being abandons the dog, the dog will lose the structure of the group and its relations. If this is explainable through the concepts of suffering and natural behaviour, then it will not be a special aspect of welfare. But if there is something in the human-animal bond for dogs which is something else than the other two aspects, abandonment has to be regarded as an important aspect to have in mind when defining welfare.

FREEDOM FROM INTERFERENCE

In legislation concerning wild animals one main idea is that wild animals should have freedom from human interference (see the Convention on Wild Animals or the Protection of Species Ordinance in Sweden). This may be seen as a part of the welfare concept. A good welfare for a wild animal is that the animal is not disturbed by a human. Still this is questioned in the Swedish Hunting Act. According to that act even wild animals should be helped so that they can prosper.

When it comes to animals in human care the amount of interference from humans is important. If a human does not look after her or his animals, the animals may suffer when no one is noticing it. Also, animals in human care "must not be tied in a way that causes pain or does not allow them the necessary freedom of movement" (Swedish Animal Welfare Act, Article 6). Most animals in human care are restricted in movement, even those in extensive use. For example, reindeer are most of the time in the wild, but are gathered at least once a year for marking and slaughtering. Even wild animals could in some sense be restricted by human actions. A road may be too wide for a butterfly to cross. Fences for elks and deer restrict the movements of many mammals. These aspects are in Sweden dealt with to some extent in the Protection of Species Ordinance Article 1 which states that

1a Regarding wild birds and those wild animal species which are marked with N or n in the appendix it is forbidden to

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4. purposely ... destroy the animals' places for mating or rest.

OTHER RELATED CONCEPTS

The Swedish term *viltvård* in the Swedish Hunting Act could be regarded as related to welfare at least on the level of species. A species cared for should continue to exist in the country and the strain of the species should be helped so that an appropriate development of the species will occur.

Why call it animal welfare law? In Sweden the main act is *Djurskyddslagen*, which literally means animal protection act, but the act is officially translated as the Animal Welfare Act. The same holds for the German *Tierschutzgesetz*. When writing about the Protection of Animals Act 1911 and other English law concerning animals, Radford (2001) entitles his book *Animal Welfare Law in Britain*. The now existing English Animal Welfare Act 2006 deals with both cruelty and welfare.

What is the problem? Is it not just a matter of words? No, the use of words is important because it shows what emphasis should be put on different concepts in the law or what is important in the law. Animal protection focuses on the things that humans do for animals, while animal welfare focuses on the animals. When using the term "animal protection" in the law the legislator risks that the law will be seen as human-centred, which is not the main purpose of the German law.

THE RELATION BETWEEN HEALTH AND WELFARE (OR WELL-BEING)

With regard to the Convention for Farm Animals lack of health may cause suffering, which is seen as something to avoid for the sake of welfare. In this way health is a means to attain welfare, or health constitutes welfare. In the German Animal Welfare Act health is not mentioned explicitly but regarded as a part of the concept of well-being (Kluge 2002, p. 91). The relation between the concepts of health and welfare (or well-being) is not clearly stated in any law that I have studied. However, in the Swedish Animal Welfare Act they are regarded as separate concepts. Summarised, the relations may be expressed as follows:

- Health and welfare (or well-being) are two separate concepts (Sweden)
- 2. Health is a part of welfare (or well-being) (Germany)

ON THE USE OF WELL-BEING OR WELFARE

The Treaty of Rome and the Conventions for Farm Animals and Pet Animals use the term "welfare". In England "welfare" is now widely used through the Animal Welfare Act 2006. The Swedish *Djurskyddslag* and the German *Tierschutzgesetz* are both translated as Animal Welfare Act. (The most proper translation for both is "Animal Protection Act".) In the Swedish Animal Welfare Act the terms "wellbeing" and "welfare" are not mentioned in the central articles. In the German act the term "well-being" is mentioned. In the Convention for Laboratory Animals, "well-being" is used.

Broom and Johnson (1993) claim that German only has one word for both terms. In German still two terms may be used, "*Tierschutz*" and "*Wohlbefinden*".

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¹⁰⁷ Radford also presents acts concerning Wales and Scotland.

"Tierschutz" is the central term in Germany and the commonsense translation of the term is "animal welfare". "Tierschutzgesetz" is then "Animal Welfare Law". Literally the translation of "Tierschutz" is "animal protection". That is the same word as the Swedish "djurskydd" and the Swedish word is used in the same manner ("djurskyddslag", literally "animal protection act", but translated as "Animal Welfare Act"). Tierschutz also focuses on human care and a suitable environment. Wohlbefinden is translated as well-being and is a central concept in the German Animal Welfare Act. This adds further evidence for differentiating between the concepts of well-being and welfare.

IS WELFARE THE MOST IMPORTANT CONCEPT?

To speak of animal welfare law is to imply that welfare is the goal and that other phenomena, for example health, are only means to reach the goal. Take for example the Swedish law, translated as the Animal Welfare Act. This law mentions health in one of the main Articles but not welfare. Does the title of the law mean that health is a part of welfare or a means for attaining welfare? Or does the title of the law say that health is separate from welfare and less important than welfare? To say that health and welfare are two distinct concepts with equal importance, the law should be named the Animal Health and Welfare Act. For the other two countries, health is not mentioned in such a way, and in those cases welfare seems to be the most proper concept to mention in the title. The German law could have been entitled the Act for the Well-being of Animals.

Table 6. Summary of the empirical material of the legislation. The three approaches mentioned refer to the Three Broad Approaches (Duncan and Fraser 1997).

	Legislation
Health	Mentioned as a concept,
	though undefined
Well-being	Used with regard to
	laboratory animals
Welfare	Approaches (1) feelings
	and (3) naturalness, to
	some extent (2)
	biological functioning.
Relations between the	Lack of or sparse
concepts	discussion.

 $^{^{\}rm 108}$ Jörg Luy in email, personal communication.

¹⁰⁹ Ute Knierim in interview, September 17 2004.

DEATH

The legislation in the three countries imply that good welfare is regarded as so important that an animal in a bad condition (or undergoing too much suffering) is to be euthanised rather than allowed to continue to suffer. English legislation even states that it is in the interest of the animal to be killed (or "destructed", which is the term in the Animal Welfare Act 2006).

8. A further analysis of the concepts of natural and nature

In this chapter I will turn to the ideas of the nature of animals or natural behaviour of animals and make a thorough analysis. Natural behaviour is crucial in the interviews with veterinary surgeons and in some of the quoted legislation. In the interviews and in legislation concepts referring to the terms "natural" and "nature" are common and crucial. The main theme in some of the interviews was related to natural behaviour, but there were also other terms such as "natural needs" and "natural function". In Swedish legislation natural behaviour is almost as paramount for animal protection as the idea of minimising suffering. Also some of the scientific texts regard it as important. In particular environmental farming values this approach highly.

The concepts of natural behaviour and the nature of animals seem to have a more general application among animals than for example suffering, which is restricted to those animals that are able to suffer. Natural behaviour has almost the same general application as biological functioning when it comes to distinguishing between species with regard to welfare. All species have a nature. When it comes to role the situation is unclear. Whether the notions of natural behaviour and the nature of animals apply to both the roles of wild animals and the roles of animals in human care or only to one of them needs to be analysed.

There are things to sort out which are unclear. Some critics claim that the concept of natural behaviour does not have a proper definition. I will also discuss whether the definition of welfare in terms of "animal nature" or "natural behaviour" forms a separate category. If the criterion of natural behaviour or the nature of an animal, when analysed, turns out to be something else, then this category should be reduced to other categories.

TWO SIGNIFICANT ASPECTS

An analysis of the terms "nature" and "natural" involves two significant aspects. Firstly, "nature" and "natural" are rather open terms that may be interpreted in different ways (for example in terms of "normal" or in terms of "normative") and therefore the reference of these terms needs to be clarified. Secondly, adding an

extra word to "natural" as in "natural behaviour" may give new connotations to the term. The additional word may for example narrow a broad concept of nature or pinpoint a certain area where "natural" should be applied. This means that both the reference for the combined term and the relation between the additional word and nature or natural should be thoroughly analysed.

Maybe all the aspects discussed in this chapter will fit into what Appleby and Sandøe refer to as "natural living" (Appleby and Sandøe 2002). Appleby and Sandøe argue that an idea of "natural living" may be divided and analysed in several ways. They differentiate between "animal nature" and "natural environments", mentioning the lack of consideration in the latter for human wellbeing. This chapter will analyse concepts such as the nature of animals and natural behaviour. I will recapitulate and extend the analysis of this theme from Chapters 4 to 7. I will start with the nature of animals. 111

The nature of animals

The concept of animal nature has in its modern form been elaborated by Bernard Rollin. The rights of animals are an issue of major concern for him. One of these rights, the right of the animal to live with regard to its *telos*, has been used by him in the debate about animal welfare. Rollin claims that his theory is in harmony both with "common sense" and scientific knowledge. Rollin defines welfare in the following statements.

However many divergent definitions of animal welfare one may encounter in the literature, surely all would consider the health of the animal to be an essential part of welfare, and disease to be evidence against the presence of welfare... (Rollin 1993; Rollin 1996)

Not only will welfare mean control of pain and suffering, it will also entail nurturing and fulfilment of the animals' nature, what I call telos. (Rollin 1993; Rollin 1996)

For Rollin health seems to be an important part of welfare as well as control of pain and suffering. This may be valid for several theories, but Rollin also claims

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¹¹⁰ However, this area is analysed in environmental ethics (Appleby and Sandøe 2002).

¹¹¹ One may question if there is a concept embracing other concepts. The claim that natural living consists of concepts such as natural environments and animal nature lacks elaboration. Later in the article Duncan and Fraser claim that animal nature contain such aspects as natural environments, natural behaviour and natural living (Duncan and Fraser 1997).

¹¹² Rollin sometimes use the terms "well-being" and "quality of life". He makes no distinction between well-being and welfare. Quality of life is connected to the concept of happiness although he does not define quality of life (see for example Rollin (2006)).

that the concept of welfare needs to include the fulfilment of the animal's nature, or telos

HEALTH

The concept of health for animals lacks a clear definition in Rollin's texts, but some crucial ideas may be mentioned. When it comes to humans, health is not only understood as something that may be measured empirically, it is also an evaluative concept. All the physical characteristics required to evaluate health have to be valued with regard to importance. These values differ from society to society (Rollin 1983). The same is also true with regard to animals.

... health is surely a matter of value, not merely of fact. No amount of data forces the conclusion that a person or animal is healthy or sick: that judgement depends on the value system of the culture or individual in question. (Rollin 1989, p. 15)

In an early paper Rollin (1983) states that veterinary medicine has a more reductionistic, mechanistic concept of health than human medicine. A veterinary surgeon is more dependent on the client than the doctor, and this means that the client's (for animals the owner's) view of health does more guiding in the veterinary medicine case than in the human medicine case. This is partly due to different goals for the two branches of medicine and partly due to how the treatment is financed.

The concept of animal health derives not from a scientifically based ideal of proper function but rather from the client's idea of what state the animal needs to be in to function properly in the client's life. (Rollin 1983)

This may imply that Rollin accepts a functionalistic health definition, most probably the category of definitions designated *Health as biological function*. Still, that category is based on biological function and not client function, social function or, as I would refer to it in this case, the role of the animal. He hopes for a better future. He believes that when animals are recognised as individuals with intrinsic worth and not merely property, veterinary surgeons rather than clients will be able to define the concept of health.

Rollin seems to use both illness (Rollin 1983) and disease (Rollin 1993; Rollin 1996) as opposites of health. He also refers to the WHO definition of health ("Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity") as an ideal state of health (Rollin 2005), but he is unclear as to whether it should be applied to animals. Health is an essential part of welfare. If disease is evident in the animal there is a lack of welfare (see quotation above in the section The nature of animals, (Rollin 1993; Rollin 1996)).

To sum up, the concept of health for Rollin is undefined. Instead, it is relative with regard to society or actors in society. Despite Rollin's claim that health is an important part of welfare, his limited treatment of the concept in his texts indicates less importance. I will now turn to the concept of welfare and the related concepts of *telos*, suffering and happiness.

TELOS

It has become clear that animals too have natures, what Aristotle called *telos*, the 'cowness' of the cow, the 'pigness' of the pig. (Rollin 2000)

Rollin continues an Aristotelian tradition, ascribing *telos* or goals to animals. In fact he makes the connection clear by referring to Aristotle. Both Aristotle's and Rollin's theories belong to the tradition of perfectionism (which is acknowledged in Appleby and Sandøe (2002) and Sørensen (2004) in the literature of the science of animal health and welfare). Unfortunately, Rollin does not offer an analysis of the differences between Aristotle's theory and his own. Therefore I will suggest such an analysis and I will return to that after describing *telos*, suffering and happiness.

There are some differences in how Rollin presents the constitution of a *telos*.

- 1. The *telos* of an animal is "coded in the genome and expressed in its environment" (Rollin 1999), the *telos* is "genetically based, physically and psychologically expressed, which determine[s] how they live in their environments" (Rollin 1995, p. 159) or the *telos* is "genetically based and environmentally expressed" (Rollin 2006).
- 2. The *telos* is a "unique, evolutionary determined, genetically encoded, environmentally shaped set of needs and interests which characterize the animal in question" (Rollin 1989).

Rollin also uses the example "pigness" of a pig, "dogness" of a dog to explain *telos* (see quotation above in this section, and Rollin (1995)). This means that he connects the idea of *telos* to species. He sometimes also uses the term "species-specific". The two explanations above differ with regard to *genotype* and *phenotype*. Genotype is the genetic constitution of the individual and phenotype is the combination of genotype and the environment (Lawrence 2000). In the first explanation, Rollin seems to use genotype. He talks about a genetically coded

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Rollin makes a claim for animal rights but he is not an abolitionist, his opinion being that human usage of animals may still exist as long as humans respect the nature of the animals. This may be in conflict with a perfectionist line of thought.

¹¹⁴ Russow and Theran (2003) regard this as referring to the basic nature of the animals.

telos which is only expressed in the environment and unchanged by the environment. There is another short quotation supporting this view.

On my view, one can in principle assess the genetic similarity of the wild to the domestic. If they are close, yet the living conditions are significantly different for the domestic animal, then one may have a prima-facie reason to believe that the animals' *telos* is being violated – that a square peg is being forced into a round hole – and that it is not living as it evolved to do. (Rollin 1989, p. 257)

In the second explanation Rollin seems to use phenotype, because he acknowledges that *telos* is also environmentally shaped. Genetically coded functions may be understood as coping functions (Rollin 1999). Maybe Rollin has changed his mind during the elaboration of his theory from a definition based on phenotype (1989) to a definition based on genotype (1995, 1999). Unfortunately, choosing only genotype may not be a proper solution. If *telos* only depends on genotype no behaviour may be changed or adapted in the light of experiences of the environment. This implies that animals become more or less dependent on fixed responses to different stimuli. If Rollin accepts that animals can adapt to their environment (which he seems to) then *telos* must be understood in terms of phenotype.

The *telos* of an animal creates several interests in that animal. These interests should not be violated. An interest for an animal is defined as a need that could be evaluated by the animal. To be able to say that there is a need in an animal the animal must have at least rudimentary mental abilities (Rollin 2005). This is a species-restriction.

... what makes these needs interests is our ability to impute some conscious or mental life, however rudimentary, to the animal, wherein, to put it crudely, it seems to care when certain needs are not fulfilled. (Rollin 1992)

In an earlier version (see quotation above about phenotype and genotype (Rollin 1989)), Rollin states that both interests and needs follow from a *telos*, but as in the later version he values only those where the fulfilment or lack of fulfilment matters to the animal. Therefore these differences in his theory may not be crucial.

... the most basic thing we need to know in setting out such rules is what an animal's life or *telos* is like, both physically and mentally, but especially mentally, because physical needs and their non-satisfaction

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¹¹⁵ But genotype as the only aspect is already present in 1989, see quotation above in the same section.

or satisfaction result in pain and suffering or happiness and other moods of awareness. (Rollin 1989, p. 269)

Therefore welfare is not only linked to the nature of animals, but also closely tied to subjective experiences.

Welfare can not be separated from the way the animal experiences or feels the satisfaction or thwarting of its interests. (Rollin 2005)

Rollin connects *telos* to species and not to individuals. Still, the theory presupposes an individual approach. The thwarting of an individual's interests matters. This is truly individualistic. Rollin is unclear as to whether the goal should be interpreted on a species level or an individual level. I believe the best interpretation of Rollin's theory is that the main focus is on the individual's goal, with the species' constitution setting the borders for the individual. Also, the choice of genotype or phenotype for *telos* will influence the argument. If Rollin chooses only genotype then it is easier to say that the individual and the species level may be the same. Then it depends on how much variety the species-concept will allow. If Rollin on the other hand chooses phenotype, which I suggest, then it opens the door to two levels.

SUFFERING AND HAPPINESS

Suffering and happiness are crucial concepts. Suffering occurs when basic urges, needs or interests are unsatisfied. When *telos* is reached there is happiness. Happiness is the best theoretical notion representing the endpoint or goal (Rollin 1989). This indicates that happiness is the only criterion of the *telos* being attained.

Happiness is the theoretical notion which best captures what we are after, both in wanting to avoid noxious experiences for the animal and in wanting to maximize its well-being. It is plausible to suggest that happiness resides in the satisfaction of the unique set of needs and interests, physical and psychological, which make up what I have called the *telos*, or nature, of the animal in question. (Rollin 1989, p. 203)

The ideal state of animal happiness is defined as "allowing the animal to actualize the interests dictated by its *telos*, where thwarting of those interests causes some form of suffering" (Rollin 2005).

In the area we are discussing – animal happiness – the relative simplicity of animal awareness seems to lead to the conclusion that we can be more certain of animal happiness than we can of human happiness, despite the presence of language in humans. If we observe animals in ideal conditions, allowing them to fully actualize their *telos*, we would have a hard time denying that these animals are happy

– well-fed dogs frolicking in the park; groups of horses let out into lush green pastures kicking up their heels. Human consciousness allows for an infinite series of reflexivity, creating unhappiness. I may have everything I need or desire and yet be unhappy because I don't think I deserve it or because I worry about what might change or because I have some sort of survivor's guilt. (Rollin 2005)¹¹⁶

Rollin seems to regard happiness as the most important concept. Attaining the *telos* should therefore be seen as the way of reaching happiness. This implies that Rollin's theory of welfare ends up in the category of *Welfare as well-being* rather than *Welfare as natural behaviour*.

IS TELOS SACRED?

For Rollin the constitution of a *telos* is not sacred, nor the way that a *telos* is constituted. Only interests that stem from a *telos* are sacred. When a *telos* exists then violation of its interests is wrong (Rollin 1995; Rollin 2005; Rollin 2006).

What I did assert was that given an animal's telos, and the interests that are constitutive thereof, one should not violate those interests. I never argued that the telos itself could not be changed. If the animals could be made happier by changing their natures, I see no moral problem in doing so (unless, of course, the changes harm or endanger other animals, humans, or the environment). Telos is not sacred; what is sacred are the interests that follow from it. (Rollin 1995, pp. 171-172)

The animals have a right to live with regard to their nature, but animals in human care have had to make some sacrifices with regard to their nature. Still the humans need to respect the nature of animals as far as possible.

ROLLIN ON HUMAN/ANIMAL TELOS

If each animal species has a unique *telos*, then humans also should have a specific *telos*. Rollin believes that "it is probably easier to grasp the nature of a dog or a pig than to encapsulate 'human nature'" (Rollin 1999).

Animal telos is of course not the same as human telos; thus the protections they require are not the same, thus the rights of animals cannot be the same as the rights of humans. But the fact that animals do have interests that are as important to them as speech and belief are to us is indubitable. Social animals need to be with others of their kind; animals built to run need to run; these interests are species

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¹¹⁶ Russow and Theran (2003, p. 187) interpret Rollin's idea of welfare as implying that "an animal's welfare is determined by the match between its needs and interests and the treatment it receives". This is somewhat different than Rollin suggests.

specific. Others are ubiquitous in all species with brains and nervous systems – the interest in avoiding pain, in food and water, and so forth. (Rollin 1995, p. 159)

Rollin thinks that humans have unique interests such as speech and belief that differentiate them from other animals. These two quotations are in line with the tradition of saying that we share some interests with animals, but some interests are uniquely human. Then his theory will face problems with preferences that are unique in some animal species but not in humans (see Chapter 2). He does note that certain interests are specific in some animals and lacking in others. For example, putting a social animal, which normally travels large distances, into a small box without company, is a violation of the *telos* of that kind of animal. Also he claims that some interests in animals may be as important as speech and belief (Rollin 1995), which resembles the view that I develop in Chapter 2 about the possibility of unique preferences in certain animals. Further, each telos is speciesspecific – dogness of a dog, pigness of a pig etc. – and thus normatively states that each individual of a species needs to be analysed with regard to its own species. Thus one may possibly criticise Rollin for being a speciesist on the basis of these two quotations, but the theory in its ideal form respects each animal's nature with a focus on that individual animal. This does not therefore cause any problem for my analysis.

ROLLIN AND SWEDISH LAW

I will now make a digression from the analysis of the concept of *telos* by discussing a claim made by Rollin that the Swedish Animal Welfare Act is a paradigm example of his ideas. This digression is of interest with regard to the general purpose of this thesis.

In the late 1980s, the Swedish Parliament passed an animal welfare law for farm animals that is the strictest in the world yet passed through Parliament "virtually unopposed." The main thrust of this law is virtually a paradigmatic instantiation of the new ethic I have described. What the law mandates is that farm animals be allowed to live their lives in accordance with their natures, or telos as I have called it. Indeed, the entire bill is informed by the notion of rights I discussed. ...

Clearly, the law is designed to do two things essential to the ethic I have described. First, it guarantees farm animals the right to as painfree an existence as possible at human hands. Second, it addresses not only overt physical pain, but also the sort of suffering that results from the failure to adjust the way the animal is kept to its biological telos. And Sweden is just a sentinel for a worldwide movement – similar,

albeit less dramatic, reforms are being demanded all over Europe, in the EC, and in North America. (Rollin 1995, pp. 167-168)

Rollin also claims that one of the underlying important values is that animals should have "a change in raising conditions, not a change in the animals" (Rollin 1995, pp. 171-176).

The concept of guaranteed legal protection for basic animal needs and natures is surely one of the fundamental moral insights underlying the revolutionary changes It is of course most obviously instantiated in the aforementioned Swedish law abolishing confinement agriculture failing to respect the animals' *telos*, but it conceptually undergirds virtually all of the many pieces of legislation being proposed and passed on national and local levels to protect animals. (Rollin 2000)

Rollin's claim that Swedish law is his theory put into force needs to be analysed. There may be at least three sorts of claims, where Rollin may claim one or both of the first two.

- 1. The Swedish law is influenced and has its roots in Rollin's theory
- 2. The Swedish law should be interpreted according to Rollin's theory
- 3. The Swedish law has similar formulations but an interpretation that is different from Rollin's

The first claim is an empirical issue. There is no reference to Rollin in the preparatory works with regard to the law and none of the later papers attempting to define the concept of natural behaviour refer to Rollin (Algers 1990; Jensen 1990). Rollin states that Kristina Forslund was a central proponent of the idea of naturalness in Sweden (Rollin 1999). Astrid Lindgren and Kristina Forslund wrote a series of debate articles in newspapers in in Sweden, where they asked for tougher legislation (texts mainly written by Lindgren, gathered in Lindgren and Forslund (1990)). In their pleas they argued for a right for the animals to be outdoors during a certain period of the year and be able to behave according to their inherited behaviour pattern. They never explicitly referred to Rollin. The result of the series of debate articles was that the government promised to revise the legislation (which later became the new Animal Welfare Act which came 1988). Rollin's first claim is to some extent valid if "roots" are interpreted as the starting point of the debate and not as common underlying values. The second claim may be true but the third claim is the most reasonable. It may be possible to interpret the law in terms of Rollin's theory but the law and the preparatory works lack a theory of rights for animals. Neither do they talk about an animal's telos. The term used in the legislation is "natural behaviour", which differs from the idea of animal telos. Still, as mentioned, the law lacks a proper definition of natural behaviour (Algers 1990; Jensen 1990). Taken together, none of the values behind Rollin's theory seem to be present apart from the fact that both the Animal Welfare Act and Rollin's theory want to avoid unnecessary suffering.

A comparison of Rollin and Aristotle

Rollin shows clearly in his texts that his concept of *telos* is based on Aristotle's writings. I will here investigate whether Rollin and Aristotle have the same interpretations of their shared concepts regarding the content of *telos*, the endpoint of *telos*, the relation between happiness and *telos* and to which groups of organisms *telos* applies. First I will present a summary of Aristotle's view of *telos* and then compare Aristotle's and Rollin's view.

ARISTOTLE'S VIEW OF TELOS

Telos as a concept has its roots in ancient Greek philosophy and Aristotle (384-322 B.C.) elaborated extensively on it. In ancient Greek philosophy telos was the term for an end, fulfilment, completion, goal or aim (Brennan 2002). Aristotle used the concept with reference to living things, such as plants, animals and humans, but also with reference to the four elements: earth, wind, water and fire. Something with a telos has "a principle of motion and of stationariness (in respect of place, or of growth and decrease, or by way of alteration)" (Aristotle 2001b, Physics, 192b15-16). This means that an embryo has something inside that explains why it will become an individual of a certain species and not something else. Also, this principle explains why this species moves and alters during its lifetime and finally dies. Man-made things cannot have or strive for telos, because the purpose of these artefacts comes from the outside and not from within. The end (telos) for an animal to strive for is to perform its function (Reeve 2001).

The *telos* of a member of a species is the complete and perfect state of that entity in which it can reproduce itself (so, insects reach their *telos* when they become adults). (Brennan 2002)

Telos relates to happiness among humans, which for Aristotle is the end-point. Happiness means for Aristotle something else than it does today (Aristotle uses the Greek word *eudaimonia*). Happiness is good activity or the ability to start such an activity rather than amusement. In fact, Aristotle clearly states that amusement, which is synonymous with pleasure, is not to be regarded as happiness (Aristotle 2001a, *Ethica Nichomachea*, Book X, Chapter 6, 1177a). Happiness is "activity in accordance with virtue" (Aristotle 2001a, *Ethica Nichomacea*, Book X, Chapter 7). The best activity is contemplation. Slightly different interpretations of Aristotle occur. J. P. Griffin claims that two possible interpretations exist. One is that "happiness *is* being virtuous and nothing else" and the other is that happiness is virtue, health, wealth and avoidance of disasters (Griffin 1998). T. H. Irwin claims that two other interpretations exist. One is that happiness is contemplation; the other is that contemplation is the most important component (among other virtues) of happiness (Irwin 1998, 2003). Among the living things different *telos*

are apparent. Nutrition is essential to a plant, sense perception and fulfilment of desire to an animal and life guided by practical reason to a human being. Humans and animals differ in their *telos* and happiness may only be attributed to humans (Irwin 1998, 2003). Another implication of the definitions of *telos* and happiness is that during its childhood a human baby is unable to reach its human *telos* (Taylor 1998).

DIFFERENCES BETWEEN ARISTOTLE AND ROLLIN

All plants, animals and humans have *telos* according to Aristotle's theory. Rollin, on the other hand, never mentions plants and maybe the concept of *telos* has a more limited application in his case. Aristotle and Rollin are similar in ascribing both mental and physical properties to an animal or human.

There are differences between how they interpret the endpoint of *telos*. For Aristotle the endpoint is happiness in terms of good activity or the ability to start such an activity rather than pleasant feelings, where the best activity is contemplation. For Rollin the endpoint is happiness in terms of no suffering or pain. Happiness, for Aristotle, is limited to the human species, while in Rollin's theory happiness also may be evident in animals with a rudimentary mental life.

One problem with *telos* that Rollin doesn't address is that *telos* implies the final state of the organism. For Aristotle only full-grown, reproducing animals were able to be in the *telos*-state. Therefore young animals can only strive to reach *telos* and nothing about *telos* can be said before they are grown-up. If Rollin attribute the same meaning, the implication will be that it is not possible to tell if a young animal has welfare or not.

Obviously, Aristotle and Rollin do not attribute the same meaning to the terms "telos" and "happiness". Therefore Rollin's reference to Aristotle can only mean that Rollin is using the same terms though giving them slightly different meanings.

Critique of Rollin

Appleby and Sandøe (2002) differentiate animal natures (*telos*) into three different aspects, namely "natural environments", "natural behaviour" and "natural living". In 1992 Rollin thought that the best way to interpret *telos* was by way of the study of behaviour by ethologists (Rollin 1992 in Duncan and Fraser 1997). This indicates that the main emphasis will be put on "natural behaviour" rather than "natural environments".

Rollin claims that animals give up part of their nature to live with humans. The animals have to give up parts of their freedom and therefore parts of their

behaviour (connected to certain situations in freedom). There may be a conflict between living with regard to their nature and living with humans if the behaviour they suppress violates an interest. One way of avoiding this is to claim that animals only give up those parts of their nature which are unessential (or unnecessary) for them (see Dawkins's idea about proximate needs in Chapter 4).

To assume a goal in each animal and link it to species ("dogness of dog") is problematic. What may we say about a hybrid? The goal for most species is to produce or grow. If the hybrid (as in the case of some geese (Kampe-Persson and Lerner 2007)) is able to produce offspring both these goals may be met. Still, which species are we talking about, the two parent species for the hybrid or the hybrid itself?

There may be a conflict between happiness as the final goal and the ability to live with regard to the nature of the animal as a way of reaching that goal. Spedding argues that animals suffer naturally for a variety of reasons and suffering is a part of life (Spedding 2000). Therefore it is of importance to assess if it is unacceptable suffering or not. A similar argument may be based on behaviours caused by a predator, such as escaping. In ecosystems with predators a natural, common and crucial behaviour is the escaping from predators. This behaviour is not welcomed in animals in human care where the animals are restricted in movement. An outbreak of such behaviour in a small area would involve a risk of animals hurting each other. Rollin may claim that losing this behaviour is good for the animals. Such behaviour is costly and associated with bad feelings such as fear, stress and suffering. But what if a successful escape brings a lot of happiness to the animal or a feeling of being strong? Then, actually, one may argue that it is good for an animal to experience this.

The theory of welfare that Rollin proposes needs to be clarified both with regard to the concept of happiness and the concept of *telos*. For example, should *telos* be based on genotype or phenotype? Is happiness positive subjective experiences or the ability to realise *telos*?

Organic farming views on welfare - applied Rollin

The idea of the nature of animals in Rollin's sense has been further elaborated in two directions (see also Chapter 4, Conglomerate definitions of welfare). First there is David Fraser claiming that all the three approaches that Duncan and Fraser (1997) recognise (where *telos* or leading a natural life is one) are parts of the concept of welfare. This means that a good definition of welfare should

 $^{^{117}}$ This is also a point made by Dawkins in the debate on natural behaviour (Dawkins 1980, pp. 51-54)

comprise biological function, subjective experiences and a life which takes regard of the animal's nature. The second direction is evident in the area of organic farming, where natural living is fundamental to a concept of welfare and other aspects are added. Proponents of ecological farming claim that none of the three approaches is optimal when defining welfare but Rollin's definition is a good starting point. Alrøe et al. (2001) suggest that a combination of Rollin's view with Fraser's proposal of a more encompassing definition of welfare, taking account of all the three main aspects, will be fruitful. They claim that a *definiens* combining the nature of animals with experiences or feelings is the best solution.

One could claim that these suggestions represent misconceptions of Rollin's theory. Rollin actually combines a view of experiences (suffering, happiness) with a view of needs or interests. According to Rollin, needs and interests may stem from biological functions as long as some rudimentary mental abilities may be applied to the biological functions. Therefore isolating Rollin's theory as a third basic approach to welfare is problematic. Rather Rollin's theory needs to be seen as a conglomerate theory of welfare at the same level as that asked for by Fraser (Fraser et al. 1997) and the proponents of ecological farming (Alrøe et al. 2001; Lund and Röcklinsberg 2001; Vaarst et al. 2001). Therefore the proposal by Alrøe et al. about combining Rollin's theory with subjective experiences is already met within Rollin's theory, when he uses the ability to perform and possibility of performing the natural behaviour of the animal together with the final goal of happiness. Why is Rollin misunderstood? It may be due to several factors. One is Rollin's way of primarily writing in the field of ethics, only mentioning welfare fragmentarily. Another is that Rollin's theory has progressed over the years and later works have put more emphasis on the concept of happiness.

Another interesting point to make in this comparison is whether it is important to connect an ethical theory to the concept of welfare. This is not within the scope of my thesis but I hope that this question will be further elaborated in the future. Rollin's use of *telos* is included in his ethical theory of rights, the specific ideas behind ecological farming are often based on ecocentric ethics, while Fraser and Duncan's line of interpreting Rollin does not connect leading a natural life with an ethical theory. There is a difference among the authors (Rollin and those that interpret Rollin) with regard to the link between *telos* and ethical theory. Questions that need to be discussed are both descriptive and normative: Which kinds of ethical theories are connected to the concept of welfare (or well-being or health)? What possibilities exist of regarding *telos* as separate from an ethical theory but still value-based?

Natural behaviour

Let us now turn to the narrower concept, namely natural behaviour. In the scientific literature concerning animal health and welfare some definitions of natural behaviour are to be found, but using the concept of natural behaviour is hardly ever regarded as giving a complete definition of animal welfare, rather natural behaviour is to be seen as an aspect of animal welfare. In some of the interviews the term "natural" is central and a definition of natural behaviour was proposed (VT). Among the studied legislations, Swedish legislation has focused on natural behaviour. Unfortunately, there is no analysis of the concept in the different preparatory works for the legislation. Bo Algers, Per Jensen and Kerstin Malm have discussed and made interpretations of the concept (present in Swedish legislation), and their contributions also have great theoretical value. I will here present a list of suggested definitions of natural behaviour that I have found.

- 1. Natural behaviour = all the behaviours in the animal's repertoire (Kiley-Worthington (1989) in Duncan and Fraser (1997))
- 2. Natural behaviour = behaviour such as we have observed, or have good reason to expect that we could observe, being carried out by conspecifics of species A in their natural habitat in a state of non-interference by man (Bostock 1993, p. 86)
- 3. Natural behaviour = the behaviours necessary in a certain situation so that an animal can express its behavioural need (Jensen 1990)
- 4. Natural behaviour = the repertoire of different behaviours that animals exhibit when they are kept in an environment that gives them the opportunity to carry out the behaviours that evolution has created (Lidfors et al. 2005)
- 5. Natural behaviour = the behaviour for which the animal is strongly motivated and which when carried out, gives a functional feed-back to the animal (lowers its motivation) (Lidfors et al. (2005) see further Algers (1990; 2001))
- 6. Natural behaviour = the basic behavioural needs for an animal species or breed. We must be able to study these needs with objective methods (adapted from informant VT)¹¹⁸

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from Chapter 6.

In Swedish: "Naturligt beteende, det är vad vi försöker med objektiva metoder att konstatera är ett grundläggande beteendebehov hos en djurart eller ett djurslag" ... "Men det är alltså ett beteende som skall vara nödvändigt för att dom kan ha ett acceptabelt välbefinnande." Definition

7. Natural behaviour = behaviour that animals tend to perform under natural conditions, because it is pleasurable and promotes biological functioning (Bracke and Hopster 2006)

Early in discussions about natural behaviour (partly separated from Rollin's analysis) the interpretation of animal behaviour was "full behavioural repertoire" (Duncan and Fraser (1997); but see Bostock's theory below for a later account). Nowadays, as a result of the criticism put forward a more narrow term is favoured, where natural behaviour only covers parts of the behaviour that the animal exhibits. Both a wide and a narrow definition could be either simple, referring to only one aspect, or conglomerate, referring to several aspects. M. B. M. Bracke and H. Hopster (2006) advocate a conglomerate definition (definition 7 above). They find and dismiss four kinds of simple definition possibilities.

- 1. Defining natural behaviour in terms of species-specific behaviour
- Defining natural behaviour as behaviour shown in nature as opposed to shown in "artificial" or "high-tech" environments
- Defining natural behaviour as behaviour that is intrinsically motivated
- 4. Defining natural behaviour as behaviour that is performed because it is pleasurable (Bracke and Hopster 2006)

Some of the definitions in the list above could be placed in these categories. Definition 2 belongs to category 2, definition 6 belongs to category 3, and definition 5 belongs to category 4. The first category, of which I have not found any definition, is questioned by Bracke and Hopster due to the fact that important needs that could cause suffering if unexpressed in behaviour are often shared by many species, such as searching for food.

Central in all these definitions are two main aspects, namely the environment and the needs of the animal. I will now turn to the simple definition of category 2 in its modern form (Bostock 1993), which is defined in a broad sense as full behavioural repertoire.

NATURAL BEHAVIOUR AS ALL THE BEHAVIOUR IN THE WILD

Stephen St C. Bostock¹¹⁹ has a method of assessing well-being based on the criteria health, breeding, natural behaviour, abnormal behaviour, direct indications and theoretical evaluation. In this assessment, natural behaviour has a central place, whereby "at least minimal requirements set by that criterion alone should not be able to be overruled by the application of any other criteria, including health" (Bostock 1993, p. 87).

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¹¹⁹ Bostock uses Rollin's theory of rights but pays no attention to Rollin's concept of telos.

I mean roughly by the 'natural behaviour' of a specified animal (A) behaviour such as we have observed, or have good reason to expect that we could observe, being carried out by conspecifics of A in their natural habitat in a state of non-interference by man. (Bostock 1993, p. 86)

Examples of natural behaviour are characteristic forms of locomotion, appetitive behaviour, maintenance activities, behaviour that establish relationship, breeding and play behaviour. Here, all behaviours present in the wild are included in natural behaviour. The definition implies that even behaviour performed during states of disease (which are not brought to the animal by humans) is natural behaviour. The reference animal should be "the successful wild conspecific" animal (Bostock 1993, p. 85), because there are degrees of well-being in the wild. The term "natural" connects also to needs.

Some natural needs are to express certain behaviour – feeding and social contact, for example. Dogs obviously have certain similar needs to ourselves, including some behavioural needs such as eating and contact with other dogs. (Bostock 1993, pp. 81-82)

This indicates that there are needs that the animal strives to fulfil. The corresponding behaviours are natural behaviour. If the needs are unmet the animal will be frustrated.

Natural is also linked to normal (normality) and norm, and Bostock refers to how we use the term in human daily life (he also actually uses the term "natural human behaviour"). He talks about behaviours that are "common to the great majority of humans" (normality) and says that we would be concerned if "our subject seemed to be departing from the natural norm" (norm). Also a well-known animal is easier to judge than an animal unfamiliar to us. This shows that there is subjective valuation inherent in the concept.

Abnormal behaviours are for Bostock negative for the well-being of the individual.

Abnormal behaviour = behaviour which we have good reason to suppose does not occur in the wild and which we believe to reveal a disturbed state in the animal displaying it (Bostock 1993, p. 88)

This definition is far more subjective than the definition of natural behaviour. It is based on a judgement by the observer. Making such a judgement is no easy task, as Bostock points out, since an animal showing this kind of behaviour in confinement may actually cope well with the situation by releasing endorphins and therefore adapt to an environment that does not stimulate it. Abnormal behaviour is in this definition seen as something that does not occur in the wild.

CRITIQUE OF NATURAL BEHAVIOUR AS ALL THE BEHAVIOUR IN THE WILD

Kiley-Worthington's and Bostock's idea of equating natural behaviour with all behaviours in the wild (natural behaviour definitions 1 and 2) has been questioned. One criticism is that this definition implies that no behaviour in human care (for example in stables) may be natural (Algers 1990; Algers 2001). Also, the implication of the definition is that all behaviour in the wild is natural, even behaviour during a state of disease. This is questionable. Another version of this argument states that welfare as a concept may not by definition be applied to wild animals (a position held by informant VT). This is counterintuitive if we consider the example of elks. An elk in a huge enclosure and an elk in the wild will still perform almost the same behaviour, but in the first case it will have good welfare whilst in the second, almost similar case, nothing may be said with reference to welfare. Another criticism put forward is that some behaviours in the wild are unnecessary for the animal (informant VT; Algers 2001). This will be further elaborated in the next sections.

NATURAL BEHAVIOUR AS SPECIFIC BEHAVIOUR

Another argument is to say that only some behaviour is natural. To study the natural behaviour of a species you have to study individuals in natural situations or in semi-natural enclosures or similar surroundings and consider if the behaviour of the domesticated animals differs from that of their wild relatives (Lidfors et al. 2005). One makes an ethogram regarding the animals' behaviour and then one points out what behaviours are the most essential for them. Some behaviour may be replaced, as for example in dogs where the hunting of a rabbit may be replaced by the chasing of a ball. ¹²⁰ In the case of other animals, for example snakes, it is important for them to eat fresh prey. This is irreplaceable. An abnormal behaviour is often thought of as different from a natural behaviour (as in the case of Bostock) but a complete analysis of the behaviour often shows that it has evolved from a natural behaviour. The reason that it evolves from natural to abnormal is that the animal is unable to carry out the behaviour that it has a strong motivation for (Lidfors et al. 2005).

Algers's model of natural behaviour is based on a model proposed by Wiepkema (see Chapter 4). The animal perceives its environment and the information gathered is called "is-value" ("ist-wert" in Wiepkema's model). The "is-value" is then compared to an "ought-value" ("soll-wert" in Wiepkema's model) in the animal's mind. The "ought-value" is based on previous experiences, but also dependent on the individual's genes, development or age. If the comparison between the "is-value" and the "ought-value" shows a difference then a behavioural programme starts with the main aim to change the "is-value" in the

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¹²⁰ Torsten Jakobsson, Swedish Animal Welfare Agency, personal communication.

direction of the "ought-value". The process of perceiving the environment and setting the "is-value", then comparing it with the "ought-value" (which may be changing due to new experiences), and if necessary changing the behaviour to better suit the environment or changing the environment, is constantly occurring in a loop. The loop checks if the behaviour performed changes the "is-value"; and if no change occurs, the animal alters its behaviour. As long as no restriction is made on the animal the feedback system is working. The animal exhibits natural behaviour as long as the "is-value" may be used (undisturbed by sounds etc.) and the "ought-value" may be reached. ¹²¹

Nordenfelt (2006) compares Algers's notion of natural behaviour with Broom's notion of welfare in terms of coping (see Chapter 4). Despite the fact that Broom's notion of welfare embraces more (for example physiological conditions), both notions concern how well the animal handles the situation or adapts to the situation.

Unfortunately, Algers elaborates less on how the "ought-value" is altered. Obviously the value may be changed because of new experiences, but may the "ought-value" change so that an animal may adapt to a harsh and sterile environment? How much influence do previous experiences have in comparison with influence from the genes? Hens that are brought up in a two-dimensional environment are later in life unable to understand the use of perches in a three-dimensional environment (Gunnarsson et al. 2000).

Two other attempts to define natural behaviour as specific behaviour (Jensen and VT) are the following. According to Jensen the interpretation of Article 4 of the Animal Welfare Law should not include all the natural behaviour of the animal (Jensen 1990). He argues that natural behaviour only focuses on such behaviours as are necessary in a certain situation so that an animal can express its behavioural need. The existing regulations that year (1990) indicated that cows were allowed to be tied up during a large part of the year and piglets could be separated months before the natural time of separation. Jensen interprets the Swedish word möjlighet (possibility) in Article 4 as giving the essence of the law. Also, the law rules out places for animals where unnatural behaviours arise (Jensen 1990).

In one of the interviews described in Chapter 5 there was an attempt to define the concept of natural behaviour (definition 6 above).

Natural behaviour is the basic behavioural need an animal species or animal breed possesses, that we are able to study with objective

 $^{^{121}}$ Nordenfelt interprets this as "at least approach" the "ought-value", meaning that the animal does not need to reach the "ought-value".

methods.... The behaviour is necessary for achieving an acceptable well-being, (informant VT)¹²²

Examples of such behaviour given in the interview were dust bathing in hens and caring for offspring. Natural behaviour is not all the behaviour one observes in nature according to VT. This implies that the concept of natural behaviour entails fewer kinds of behaviour than "behaviour one sees in nature". Natural behaviour only entails those behaviours that the animal still performs despite no stimulating reason in the environment.

NATURAL BEHAVIOUR AS A CONGLOMERATE DEFINITION

Bracke and Hopster's aim is to find a conglomerate definition which takes account of the three broad approaches to welfare.

Natural behaviour = behaviour that animals tend to perform under natural conditions, because it is pleasurable and promotes biological functioning (Bracke and Hopster 2006)

The theory behind the definition is, as in the case of Algers's, based on Wiepkema's theory of "ist-wert" and "soll-wert". Bracke and Hopster believe that behaviour such as searching for food, mating, locomotion and nest-building is included in the concept while behaviour such as flight and aggression is excluded. The latter behaviour is often not wanted in animals in human care. Still, one can question whether Bracke and Hopster's belief is true. Aggression could be rewarding for an animal if the animal resolves a situation by winning a fight, then feeling fine.

IS THE CONCEPT OF NATURAL BEHAVIOUR TOO VAGUE?

Kerstin Malm questions the use of the term "natural behaviour" in Swedish legislation (Malm 2004). Her main critique can be divided into 6 main arguments and concerns the vagueness of the concept. Unfortunately, no specific definition of natural behaviour is referred to in the text but I will here show which kinds of definitions will need to meet the criticism.

First, one criticism concerns the concept of species and individual variation. Also, in this line of criticism there is a discussion of the role of domestication. Malm argues that deciding what is the natural behaviour of a species is impossible because all individuals are unique in their behaviour and they act with regard to the situation. (This is not only a question for natural behaviour; it is also a criticism of Rollin's *telos* claim such as "pigness of a pig". Is it possible to refer to

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¹²² In Swedish: "Naturligt beteende, det är vad vi försöker med objektiva metoder att konstatera är ett grundläggande beteendebehov hos en djurart eller ett djurslag" ... " Men det är alltså ett beteende som skall vara nödvändigt för att dom kan ha ett acceptabelt välbefinnande."

"pigness" when a species includes a wide variety of genes or individual responses?) Even if one minimises the importance of the environment and claims that genes are dominant this argument is still valid. Malm elaborates this further. When different breeds of dog show different behaviour in a certain situation, what is then the natural behaviour for a dog?¹²³ Here I will make a digression on genetic code to further analyse Malm's argument.

What is the natural genetic code of an animal? An important function of evolution is to change the genetic code so that the species is able to adapt to environmental changes. Whether a mutation is good or not is often hard to tell if there are no obvious changes for the animal. Often it takes several mutations before a new species is recognised. Another process is genetic drift, which occurs when a small population gets isolated. The isolation makes the genetic variability limited and changes occur faster. This has been used in the process of domestication. Through controlled breeding some behaviour (such as aggression) has been suppressed. Other behaviour has been bred for (such as calmness).

We need to answer the question how much domestication really causes the animal to differ from its wild relatives. Are the domestic forms of a species different from the wild species due to changed behaviour in terms of novel behaviour or loss of behaviour, changed behaviour in terms of willingness to exhibit it or changed behaviour in terms of importance of exhibiting the behaviour? The second type of change is most easily demonstrated when a comparison shows that the wild species in a certain situation shows more aggressive behaviour than the domestic form. The third type of change is most easily demonstrated when for example the time budget of the wild jungle fowl shows much more food-searching activity than does that of the domestic fowl.

Some authors claim there are huge differences between domestic forms and wild forms (Dawkins 1980¹²⁴). In laboratory medicine, animals have been bred so that they are so specialised to meet the relevant laboratory environment that they would not survive in nature (Russow and Theran 2003). Other authors, like Algers and Jensen, claim that domestication only changes how much a behaviour is exhibited rather than making it extinct (a difference in degree rather than kind). The research they base their claim on shows that the whole repertoire of behaviours from the wild animal is still there in the tame animal. Still the tame animal is calmer, less aggressive and less frightened of humans. Does the domestic animal still have its wild nature or does it have a new, tame nature? A

¹²³ This criticism was first put forward by Dawkins (1980).

¹²⁴ This may be too early a reference to actually have an influence nowadays. Today we know more about actual differences in behaviour.

central criticism of Rollin's theory which also is evident here concerns hybridisation. Hybridisation means that two species breed together and get progeny. Hybridisation occurs both among wild and enclosed animals. Some of these hybrids are sterile while others, such as some crosses of geese, are fertile (Kampe-Persson and Lerner 2007). What kind of nature do hybrids have?

Second, Malm claims that some behaviour is unwelcome, even if it fits into a definition of natural (here she probably has a definition similar to Bostock's in mind and this criticism is only valid when it comes to broad definitions such as 1 and 2). Flight behaviour from predators for example is unwelcome in farming. We may ask ourselves which behaviours we are referring to, those that are good for the animals that humans accept or those that are good for the animals regardless of human valuation. My point is, do animals feel good in realising that they have escaped from a predator? As humans, we often get a feeling of strength or pleasure knowing that we have handled a situation properly and "survived". Escaping from a predator must in a way mean to an animal that it still is healthy.

Third, Malm also claims that there is a difference between purposeful behaviour and natural behaviour. An aggressive behaviour in an aggressive situation may be a useful adaptation even if the aggressive behaviour does not belong to what she believes could be defined as natural behaviour (which is here given a more narrow definition than the one proposed by Bostock).

Fourth, there is a risk in using natural in a normative sense. Should all the wants, needs, or interests of the animal always be fulfilled? In nature there is also a restriction exercised by the environment, by other individuals of the animal's own species, or by other species on the behaviour that may be performed. If all rabbits are able to mate and get as much progeny as possible, soon the carrying capacity of the ecosystem will collapse. Afterwards, far fewer rabbits will be able to live in that area. Therefore the restraints are serving a purpose.

Fifth, there is also a risk in using natural in another normative sense. Is the behaviour natural in our eyes or is it truly natural for the animal? Malm argues that humans judge what behaviour is proper and "natural" for a given species. To recapitulate my earlier criticism, escaping from a predator may be not valued as natural behaviour even if it is natural for the animal.

The sixth argument is of minor importance. Malm asks if there are natural behaviours which are nevertheless, when looked at more closely, unnatural behaviours. This question may be resolved by referring to Bostock's definition of abnormal behaviour, where abnormal behaviour is behaviour which does not occur in nature and seems to result from a disturbed state. This could be labelled

as "unnatural". Dawkins claims that it cannot be assumed that captive animals suffer through not performing, or being unable to perform, particular natural behaviour. This criticism is still fruitful in the sense of asking for better proof. The fact is, the link between suffering and a particular behaviour is hard to confirm, but most scientists today agree that some animals feel pain and some are able to feel rudimentary forms of suffering. To hinder very longed-for behaviour probably causes certain negative experiences.

WHY NATURAL BEHAVIOUR AND NOT SPECIES-SPECIFIC?

In one sense of natural behaviour, species-specific behaviour is synonymous with it. German legislation uses the term species-specific behaviour in the German Animal Welfare Act. Article 2 implies that different species have different needs when it comes to being housed. Also it states that restriction of the species-specific behaviour can cause pain, suffering or harm. (This is in line with Rollin's view of the nature of animals.) Species-specific behaviour seems in that case to be more related to what humans provide for the animal and to the fact that an animal should be free. In Swedish legislation the term natural behaviour is more animal-centred, where the animal's natural behaviour should be promoted.

WHY NATURAL BEHAVIOUR AND NOT NORMAL?

Several terms such as "natural behaviour", "normal behaviour", "behave naturally" and "behave normally" are used by the informants in the interviews. For some veterinary surgeons the terms "natural behaviour" and "normal behaviour" refer to the same thing. This may be observed either when informants clearly state that there is no important difference between the two terms or when the analysis of the interview shows that the informant mixed the meaning of the terms throughout the interview. Among the informants where the frames of reference for natural and normal differ, "natural" has a connotation of what is observable normal individuals in nature while "normal" has a connotation of what is observable in normal individuals in all kinds of environment (see Chapter 6 for a discussion of the different meanings of the terms "natural" and "normal"). The concept of normal is therefore wider than the concept of natural.

In the interviews the concepts of natural and normal mainly refer to populations in the wild. Why not use animals in human care as a reference? One explanation unmentioned by the informants is that animals in human care are treated in a way that makes impossible an evaluation of what their natural behaviour is. Let me give one example from an important issue for animals in human care, namely lack of stimulation. In a flat a cat is resting for most of the day. Is this an apathetic cat because of lack of stimulation or does the cat feel well and therefore rest most of the day? In a situation in nature we presuppose that a total lack of stimulation

never occurs. In this sense, natural becomes normative. The natural environment is supposed to be more stimulating for animals.

Conclusion

The criticism of the category of definitions of *Welfare as natural behaviour* can be summarised along two lines. The first line of criticism is that some of the definitions actually belong to another category. This seems to be the case with the often-referred-to definition put forward by Rollin. This definition is rather a definition in the category *Welfare as well-being*. One could also argue that some of the definitions of natural behaviour refer to fulfilment of needs or coping (in terms of adaptive behaviour), where natural behaviour only indicates what needs or what adaptations are important.

The second line of criticism is that the definitions of natural behaviour involve problems. Malm has summarised six arguments showing that the definitions of natural behaviour are too vague and I have added some discussion both in my analysis of Rollin and in my analysis of natural behaviour. The main arguments concern the evaluation of an individual behaviour within a species frame as well as hybridisation and novel genetic changes in individuals.

One argument in favour of Rollin's theory, as I mentioned at the beginning of the chapter, was that the nature of an animal has a general application in the animal kingdom. My analysis shows, however, that Rollin demands at least rudimentary mental abilities for the animal to be able to have needs and attain happiness when these needs are fulfilled.

9. General comparison and discussion

In this Chapter I will summarise the three sets of empirical material. They give different information for the total picture of the concepts of health, well-being and welfare. The findings are summarised in Table 7 and discussed at length in the sections about classifications of health or welfare and in the sections on relations between the concepts. Obviously, no true consensus about the definitions of the concepts exists and the discussion today is as vigorous and open as it was during the 1990s.

Table 7. Comparison of the different empirical materials. The three approaches mentioned refer to the Three Broad Approaches (Duncan and Fraser 1997)

	Literature	Interviews	Legislation
Health	Present but shallow	Rich discussion, several	Mentioned as a
	characterisation and sparse	fruitful attempts to define	concept, though
	debate	the concepts	undefined
Well-being	Is avoided at least partly in the	Evident for some	Used with regard
	science of animal health and	informants, avoided by	to laboratory
	welfare. The concept is used	one informant.	animals
	in the sub-area of laboratory	Feelings central.	
	animals and to some extent by		
	American researchers.		
Welfare	Broad but not universal	Avoided by some	Approaches (1)
	consensus around three main	informants.	feelings and (3)
	approaches: (1) feelings	Approach (1) feelings and	naturalness, to
	(2) biological functioning	(3) naturalness, also the	some extent (2)
	(3) naturalness	approach of welfare as	biological
	(other approaches exist and	suitable environment and	functioning.
	are sometimes preferred)	care.	
Relations	Sparse discussion but exists.	Rich discussion on the	Lack of or sparse
between	Welfare preferred to well-	relations between all	discussion.
the	being among European	concepts. Unclear	
concepts	researchers within the sub-area	whether well-being or	
	of farm animals.	welfare should be used.	

I will below analyse the categories of definitions of health and welfare. I will analyse them from the aspects of role and species and add discussion with regard to the nature of the category, whether it could be reduced to another or if the category is a new proposal. The different categories will therefore be accorded different amounts of space. I will discuss the categories of definitions of well-being, of which I in Chapter 5 proposed a tentative list, after the relations of the concepts and the question whether well-being is useful for the science of animal health and welfare. Finally I will present possible clusters of concepts that the science of animal health and welfare could use in the future. I will also argue for an acceptance of the already introduced concept of well-being as a useful separate concept within the framework of evaluating if an animal is well.

A general comment on species-restrictions

All species-restrictions mentioned in this thesis are based on lack of certain mental abilities such as the ability to suffer. For a better understanding of my discussion of the categories of concepts and the clusters and the applicability of the different definitions of the concepts, I will here briefly present my view of what mental abilities it is possible to ascribe to animals.

I have chosen to accept that some animals may have a mental world. The problem is where the line that divides the animal kingdom is to be drawn. In my choice of definition of the term "animal" I chose to include only animals with at least a rudimentary nervous system (excluding *Porifera*, see Chapter 2). Then I accepted what Sambraus calls the "analogy-conclusion of mankind" (see Chapter 4) for sensation, saying that just as one accepts that a human is capable of understanding another human's sensations only by observing the person, the same holds for animals. Unfortunately the more different an animal is to humans the less reliable is the assumption. It is reasonable to assume that almost all animals with pain receptors experience something that one could call pain (as something to avoid). Suffering demands higher cognitive abilities and fewer species have this. Consciousness as one example of a high level of cognitive ability has been under much discussion, where at least one assumption is that birds and mammals share some common ground in this respect (Butler et al. 2005). Memory has been shown to exist in lizards but also in crayfish. 125 These assumptions will influence the choice of all the definitions of the three concepts.

Classification of health definitions

The discussion about the concept of health is sparse but does exist in the literature (see Gunnarsson (2006) about the concept of health in veterinary textbooks). In legislation the concept is mentioned sometimes, but no definition is explicit. In the

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¹²⁵ Lennart Edsman, personal communication.

interviews several attempts to define health are made and all the different categories found in Gunnarson's study were found in the interviews. One could argue that the definition of the concept is taken for granted in the more formal material (literature and legislation). According to the interviews some veterinary surgeons supposed that their view of the concepts was also held by others. Still, Gunnarsson's study and my interview study show that several definitions exist which differ in crucial respects.

Gunnarsson's proposed list of categories of health definitions (mentioned and discussed in Chapter 4) needs to be further elaborated and modified when taking account of the results of the discussions in Chapters 4-6. A more elaborated classification scheme is here presented:

- 1. Health as absence of disease
- 2. Health as biological function
 - a. Health as normal biological function
 - b. Health as homeostasis
 - c. Health as productivity including reproduction
- 3. Health as mental and physical control
- 4. Health as ability to realise goals
- 5. Health as physical and psychological well-being
- 6. Health as a conglomerate concept

HEALTH AS ABSENCE OF DISEASE

Is the category *Health as absence of disease* a proper category? As I discussed in Chapter 5, two interpretations are possible. In the first interpretation, disease is often further defined as something which could fit within another of the categories. A parallel could be drawn with the field of human health and welfare where a well-known definition of health as absence of disease is the one proposed by Christopher Boorse (1997). A disease is further explained in his theory as a defect in the person's normal functional ability. This implies that the definition of health could be reformulated as a definition within the category of *Health as biological function* rather than within the category of *Health as absence of disease*. The following quotation from Nordenfelt shows this reformulation.

The individual A is completely healthy [according to Boorse] if, and only if, all organs of A function normally... (Nordenfelt 2006)

In the second interpretation, one needs to define disease according to a list of diseases. Gunnarsson in his study of textbooks in veterinary medicine follows the

first interpretation. In the interviews "disease" is a term very often mentioned in the definitions. Among those informants using the term "disease" the term is further defined. The central criticism of the second interpretation (disease as diseases mentioned) (for example such as Def Health 13) is that this way of defining health is dubious. Instead of defining criteria for diseases one only lists diseases that may affect the health of an animal. The problem comes when deciding about states or conditions that are prospective diseases. How do we know if a certain state or condition is a new disease which should be incorporated in the catalogue? One has no guidelines to follow except maybe resemblance to already existing diseases.

Therefore I argue that *Health as absence of disease*, although frequently used, should be avoided as a true category. This also implies that definitions such as Def Health 13 should be avoided.

HEALTH AS BIOLOGICAL FUNCTION

The category *Health as biological function* has no restrictions with regard to role or species. One can discuss whether there need to be two different sub-categories (*Health as biological function* and *Health as normal biological function*) as was proposed in the tentative list in Chapter 5 or not. The idea of normality is often present when biological function is discussed although the idea is problematic. That an organism functions normally does not indicate if the normal function is adaptive. In extreme situations an adaptive response may bring about health more easily than a normal response. A health definition only referring to productivity (especially in terms of productivity for humans) is not a good definition for the specific animal. This kind of definition refers to past or future offspring or amount of meat or milk produced (see A comment on production and fitness, Chapter 4).

HEALTH AS MENTAL AND PHYSICAL CONTROL

The category *Health as mental and physical control* needs to be distinguished from health defined as coping which can be found in the category *Health as biological function*. The term "coping" could be interpreted as a way of controlling life and maintaining health. Common to coping theories in the science of human health and welfare as well as in the science of animal health and welfare is that coping is regarded as a response to external or internal stimulations, mainly stressors. Broom's understanding of coping (for both health and welfare, Chapter 4) is in this sense. For him coping concerns both how much the animal must work to handle its environment and how well or badly it manages this task (Broom 1991; Broom and Johnson 1993). Therefore coping is mainly an effect of or reaction to something going on. The term "control" (as proposed in one of the interviews in my study, see Chapter 6), on the other hand, could be interpreted to include coping but also as something that goes beyond coping. As proposed by

one of the veterinary surgeons, mental health implies a certain amount of control, being able to foresee and adjust without changing the physiological functions. Aspects of control are both, according to the informant, to be able to relax and to be able to be stimulated, depending on which kind of species the animal belongs to (a kind of species restriction). Control implies both an ability to handle the occurring situation (coping) and a feeling that one is able to handle novel situations as well as well-known troublesome ones. This means that *Health as mental and physical control* entails a certain amount of well-being. The category also has species-restrictions due to mental abilities. Broom excludes feelings from his concept of health, but includes them within his overarching concept of welfare.

Here, one could link this view of control to a view held by the philosopher Georges Canguilhem within the science of human health and welfare.

What characterizes health is the possibility of transcending the norm, which defines the momentary normal, the possibility of tolerating infractions of the habitual norm and instituting new norms in new situations. (Canguilhem 1978, p. 115)

Normal (being in one norm) is here the ability to handle a certain environment. Being normative (changing norms) is the ability to change the way of living. Transferred to the science of animal health and welfare, coping could be seen as the normal and control as being normative. The normative category does not exist in the scientific material but is introduced by one of the informants. Although it is not fully developed, I have here tried to show the strength of this approach and placed it as a category of definitions in its own right for further development.

HEALTH AS ABILITY TO REALISE GOALS

The category *Health as ability to realise goals* was from the beginning developed within the science of human health and welfare. A proponent of this category, Nordenfelt, shows that the definition could be applicable to all animals regardless of species or role (Nordenfelt 2006, pp. 151-158). Still, depending on how one defines a goal this category could have species-restrictions, especially if one claims that conscious thinking is necessary for having a goal (which Nordenfelt does not require).

HEALTH AS PHYSICAL AND PSYCHOLOGICAL WELL-BEING

The category *Health as physical and psychological well-being* entails a certain amount of species-restriction. Mental abilities are crucial and the animal needs to have a mental world. I argue that health definitions that only refer to the concept of well-being should be avoided in the clusters presented below, because the use of such definitions tends to reduce the number of possible reference areas (see Clusters, below).

WHAT BELONGS TO HEALTH IN VETERINARY MEDICINE?

Some researchers claim that health is to be defined biologically within veterinary medicine (as part of the science of animal health and welfare). Broom and Kirkden (2004) consider that veterinary medicine traditionally has dealt with deviant physiology. Disturbances in behaviour have not been a part of the health concept. In a comparison between doctors and veterinary surgeons in the USA, Rollin comes to the conclusion that the veterinary surgeons have through their education a more biologically reductionistic concept of health than the doctors. Generally, both groups in this study had biologically reductionistic concepts (Rollin 1983). Gunnarsson (2006), on the other hand, shows that some textbooks in veterinary medicine include mental health within the concept of health. Broom and Kirkden also refer to these kinds of definitions but criticise them. In my interview study, focusing on the situation today in Sweden, several possible definitions including mental health or holistic health theories are present. 126 Disturbances in the behaviour are then a part of the mental ill-health. This indicates a change in veterinary medicine as compared to the suggested traditional view. Today, mental health is acknowledged at least in some animals and veterinary medicine is less reductionistic.

Classification of welfare definitions

Most of the definitions of welfare in the literature (Chapter 4) belong to the Three Broad Approaches presented by Duncan and Fraser (1997), even though other definitions are used (for example Welfare as complete mental and physical health and being in harmony with the environment or Welfare as suitable environment and care). Also conglomerate definitions blur the scheme. In legislation two of these Three Broad Approaches are dominant: feelings and natural behaviour. In the interviews the idea of natural behaviour came out as crucial, while welfare in terms of suffering was troublesome and almost absent. Notably, consensus exists among the informants about natural behaviour. This approach was not included in the consensus statements among scientists in the field of animal health and welfare which were elicited using the Delphi method (Anonymous 2001, see Chapter 4). A modified list of welfare definitions which takes regard of the results from Chapters 4 to 8 is presented here. I have added one new category (number 7) which will be tentatively discussed below.

- 1. Welfare as development according to natural selection
- 2. Welfare as coping
- 3. Welfare as fulfilment of needs

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¹²⁶ The concept of health among the doctors also contained definitions including mental health or a holistic view (see Lerner 2008).

- 4. Welfare as well-being 127
 - a. Welfare as pleasure
 - b. Welfare as satisfaction of preferences
- 5. Welfare as natural behaviour
- Welfare as complete mental and physical health and being in harmony with the environment
- 7. Welfare as maintained dignity of the animal
- 8. Welfare as suitable environment and care
- 9. Welfare as a conglomerate concept

For three of the categories I have little to add. These may however have restrictions with regard to role or species. The category *Welfare as development according to natural selection* has no restrictions with regard to role or species. The category *Welfare as coping* has no restrictions with regard to role or species. This category could imply that mental abilities are needed to be able to cope but there is no demand for certain mental capabilities in the definitions within this category (see also Health as mental and physical control, above). The category *Welfare as well-being* has restrictions with regard to species. Mental abilities are crucial. For this welfare category one can argue that *Pleasure* demands less mental capabilities than *Satisfaction of preferences*.

WELFARE AS FULFILMENT OF NEEDS

I have in Chapters 4 and 5 indicated that this category, *Welfare as fulfilment of needs*, may be reduced to other categories of definitions. In English legislation welfare is defined as fulfilment of needs. The needs specified are evolved from the Five Freedoms (cf. Welfare as suitable environment and care, above, for another use of the Five Freedoms). If the needs are specified as the Five Freedoms then *Welfare as fulfilment of needs* is a true category because it cannot be reduced to either *Welfare as coping* or *Welfare as well-being*. Depending on which needs, the category *Welfare as fulfilment of needs* has different restrictions with regard to role or species.

WELFARE AS COMPLETE MENTAL AND PHYSICAL HEALTH AND BEING IN HARMONY WITH THE ENVIRONMENT

As I indicated in Chapter 4, Welfare as complete mental and physical health and being in harmony with the environment needs to be further defined with regard to the term "harmony". I have suggested several possible interpretations. The first is that welfare only comprises health and complete health occurs when the animal is

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¹²⁷ Also called "feelings" or "subjective experiences".

in harmony with its environment (Health as homeostasis or Health as mental and physical control). Harmony may then be a balance. The second interpretation is that harmony is some sort of subjective experience (Welfare as well-being). The third interpretation is that the animal successfully handles its surroundings (Welfare as coping). The fourth interpretation is that the animal is doing well in the interaction with other animals at the farm and with the humans that take care of it (Welfare as suitable environment and care). It seems as if Hughes wants to avoid the first interpretation when he together with Curtis claims that health should be understood as Def Health 7 (Hughes and Curtis 1997).

This category with its subsequent definitions (in fact only one) is the least developed within the science of animal health and welfare even though the line still has advocates. For it to gain further importance within the field, this approach needs to be developed further.

WELFARE AS SUITABLE ENVIRONMENT AND CARE

The category Welfare as suitable environment and care resembles the concept of animal protection. Both have their main focus on the surroundings of the animal and the care given to the animal. A slight difference could be traced. Welfare defined as suitable environment and care could still have a focus on the animal. In enrichments, for example, Welfare as suitable environment and care includes those aspects of the enrichment that the animal is able to experience or understand depending on the different senses of the animal. The welfare aspect concerns how this enrichment presents itself in the animal's world with regard to the capacity of the animal to experience its surroundings through its different senses (see the concept of *Umwelt*, Chapter 2). The concept of animal protection entails what humans are able to provide concerning care and the surroundings of the animal. The animal protection aspect concerns the things that the humans are able to add (and still maintain the purpose with keeping the animal in their care) with the aim of improving the animals' welfare. Interestingly, one view among the informants in the interview study was that "welfare" referred to suitable environment and care. The definition suggested here was the Five Freedoms (animal focused).

This category of welfare could also be compared to species protection in the same manner (although species protection concerns a wider range of species, not just animals). A plan for species protection often concerns a suitable environment and care. For example, management of pastures by grazing is used to make a suitable environment for some species. Additional food is sometimes given during severe conditions and sometimes relocation is done to maximise the genetic pool within the species. The species protection aspect is then what humans do for the survival of the species (including setting limits for what is regarded as a species, cf. the discussion on hybrids). Welfare is then applicable to species that are animals and

is what the animal is able to experience of the species protection programme (which may be nothing, see below for a discussion of different wild roles).

The category Welfare as suitable environment and care has role-restrictions. Definitions in this category seem not to apply to animals in the role of being wild but let us compare this with the Swedish concept of viltvård. In the Swedish legislation the concept of viltvård is used for animals in a wild role although still hunted. Viltvård concerns things provided for the animal (such as food for elks during severe winters). How should this be analysed? The interpretation is either that the animals referred to are not in a wild role or that it is possible to apply welfare in the case of wild animals. I believe that the role of being wild could be further divided into several different roles:

- ❖ The role of being wild with no interaction with humans
- The role of being wild and monitored due to risk of extinction
- ❖ The role of being wild and cared for in an extreme climate
- The role of being wild and hunted so that there shall be a suitable population for humans

By this differentiation of roles the claim that the concept of welfare could not be ascribed to wild animals will be reduced to concern only the first role. *Welfare as suitable environment and care* is not applicable to animals in the role of being wild with no interaction with humans.

WELFARE AS NATURAL BEHAVIOUR

As has been shown in Chapter 8, not all suggested definitions within the category Welfare as natural behaviour should belong to that category. Rather some of them belong to Welfare as well-being, Welfare as fulfilment of needs or Welfare as a conglomerate concept. Those definitions that still remain are restricted with regard to role but not at all with regard to species. If we refer to animals in their wild role the implication is that the animals in only have one level of welfare because they always behave in a natural way. If the wild role is further divided one needs to ask how much intrusion in the daily animal life the humans are actually responsible for (see Welfare as suitable environment and care, above).

WELFARE AS MAINTAINED DIGNITY OF THE ANIMAL

The category of *Welfare as maintained dignity of the animal* does not exist as a true category of welfare in the literature (see Chapters 4 and 5). When dignity is analysed theoretically the relation to welfare is discussed and dignity is more of an ethical concept than a part of welfare (see discussion in Chapter 4). I will here propose the use of dignity to cover some welfare aspects found in legislation

which could not easily be covered by the other categories of welfare definitions, namely freedom from interference, abandonment and exposure to acts of cruelty.

The main discussion about dignity concerns humans. Dignity is sometimes very closely connected to the human species, such as in the term "Menschenwürde" ("human dignity") which is considered as one of the notions of dignity (Nordenfelt 2004). Even if this is controversial some central aspects of the rich concept of dignity (see Nordenfelt (2004) for his distinction of at least four notions of dignity) could be used in the discussion here. Nordenfelt states that one central aspect of dignity is to preserve the autonomy of a person. Autonomy often presupposes abilities that are mainly found only within the human species but it could also be seen as freedom to do what a person has an inclination to do.

The person's autonomy can be tampered with, when the person is prevented from doing what he or she wants to or is entitled to do. (Nordenfelt 2004)

Translated into the field of animal health and welfare this relates to *Freedom from human interference* (an important aspect of welfare found in legislation, see Chapter 6).

Freedom from human interference will mainly relate to wild animals (if welfare is ascribed to wild animals). Good welfare for a wild animal is that the animal is not disturbed by a human. But a total freedom from interference will hardly be claimed. In the Swedish Hunting Act even wild animals should be helped so that they can prosper and hunting is seen as regulating populations for this purpose. When it comes to protection for endangered species at least disturbances made for research concerning the species are allowed (see also Welfare as suitable environment and care, above).

When it comes to animals in human care interference by humans is important. If a human does not look after her or his animals, the animals may suffer without anyone noticing. Still, animals in human care "must not be tied in a way that causes pain or does not allow them the necessary freedom of movement" (Swedish Animal Welfare Act, Article 6), which means that they should not be too much restricted. I will also argue that animals in human care need a certain amount of freedom from interference on the part of other animals or humans. Animals in a low position in the hierarchical order that have no hiding-place to go to will have a bad life. Too much interference from humans in flock-living animals in human care which do not see humans as part of the flock will be more negative for the animals because they cannot settle their hierarchical order. All in all freedom from interference (if included in welfare or well-being) differs according to different roles where a gradient of human interference is evident.

Some of this gradient will also depend on species: a flock-living animal which regards humans as its flock may tolerate more human interference (Table 8).

Table 8. The suggested amount of interference from other animals or humans in the case of different roles and species.

Role Species	Wild with a risk of extinction		Wild		In human care	
	Solitary	Flock	Solitary	Flock	Solitary	Flock
Animal	Little	Much	Little	Much	Little	Much
interference						
Human	None	None	Little	Little	Much	Much-
interference	except	except				Total
	research	research				

Another aspect of dignity mentioned by Nordenfelt (2004) is that dignity (what he calls dignity of identity) may be lost when a person is excluded from a certain community. For this aspect to be transferred to animals, one needs to link the aspect to the human-animal bond. Protection from abandonment will only be of importance if welfare or well-being acknowledges a certain human-animal bond which could be damaged when the animal realises that it is abandoned, for example a dog losing its belonging to a group or an animal losing trust in humans (see Discussion, Protection from abandonment, Chapter 7).

Another way of losing dignity is to be exposed to acts of cruelty such as being humiliated, hurt etc. (Nordenfelt 2004). For animals legislation has for a long time had a focus on cruelty towards animals. The initial reason to prevent cruelty to animals in legislation is based on the idea that humans that are cruel to animals also will turn to being cruel to other humans. Today, when several legislative bodies acknowledge that animals have feelings and are therefore able to suffer, cruelty is seen in the sense of the animal's actual suffering. In the future, if more countries follow the German approach of acknowledging animals as fellow creatures, cruelty could be associated with the concept of dignity. An act of cruelty will then be something that causes the animal to suffer, where the act also in itself harms the dignity of the animal.

Some legislation pinpoints some aspects of welfare which are recognised among proponents of ecological farming in the science of animal health and welfare but not yet fully accepted, namely aspects of dignity. Therefore this category needs to be included as a possible part of a cluster (see Clusters, below). What the concept of dignity would look like or which notions of dignity could be ascribed to animals needs to be further analysed. Future research will show if this category with its subsequent definition or definitions will be viable.

Table 9. Kinds of restrictions on the different categories of definitions of health or welfare

Kind of restriction	Category			
No restriction	Health as biological function			
	Health as ability to realise goals			
	Welfare as development according to natural selection			
	Welfare as coping			
	Welfare as fulfilment of needs			
Species-restriction	Health as mental and physical control			
	Health as physical and psychological well-being			
	Health as a conglomerate concept			
	Welfare as well-being			
Role-restriction	Welfare as suitable environment and care			
Role- and species-restriction	Welfare as maintained dignity of the animal			
	Welfare as a conglomerate concept			
Needs further elaboration	Health as absence of disease			
before specifying if	Welfare as natural behaviour			
restrictions occur	Welfare as complete mental and physical health and			
	being in harmony with the environment			

Quality of life as a member of a cluster?

The concept of *quality of life* has entered the science of animal health and welfare (see Chapter 4) and also appears in one of the interviews (see Chapter 5). The term quality of life was in the interview used in relation to health and well-being. McMillan (Chapter 4) regards quality of life as being closely related to health, well-being and welfare. His latest definition sees quality of life as involving "the affective and cognitive ... assessment that an animal makes of its life overall, of how its life is faring, experienced on a continuum of good to bad ..." (McMillan 2005). This could serve as a theoretical definition of well-being, particularly as satisfaction of preferences or as an operational definition.

I will avoid using quality of life as a theoretical concept which has the same meaning as either welfare or well-being. In the science of human health and welfare the term is nowadays central in assessments of a person's health and wellbeing (Nordenfelt 2006). This is also indicated in McMillan's works. Therefore I reserve quality of life in this thesis for assessments in the same way as in the science of human health and welfare. 128 I also manage to reach my aims by only using three concepts (health, welfare and well-being).

welfare. This has been outside the scope of this thesis because welfare assessments use operational

¹²⁸ There is also the concept of "welfare assessments" within the field of animal health and

Relations between health and welfare/well-being

The relation between health and welfare (or well-being) can be any of the following:

- 1. Health and welfare (or well-being) are two separate concepts
- 2. Health is a part of welfare (or well-being)
- 3. Welfare (or well-being) is a part of health
- 4. Welfare (or well-being) is synonymous with health

The first, health as a separate concept, is favoured in Swedish legislation for animals in human care. The second, health as a part of welfare, is favoured by some theorists, such as Broom. Also, German legislation for animals belongs to this tradition and the veterinary surgeons interviewed seem to favour this. This relation could explain why health has been more or less neglected. The science of animal health and welfare has had its focus on the important over-arching term "welfare" and has seen health as a part of welfare. This is true, for example, of the work of Broom. ¹²⁹ The third, welfare as a part of health, was not present in any of the three materials.

The fourth possible relation, *welfare as synonymous with health*, has been proposed by Hughes and Curtis (1997) on the basis of the following statement by Ewbank:

Animal welfare has been variously defined but for practical purposes I find it useful to replace the term with the words health and well-being. (Ewbank 1987)

Unfortunately, to use this statement as an indication of welfare and health as synonymous concepts is not valid and is thus misleading. Ewbank avoids the theoretical concept of welfare by instead using two different concepts, health and well-being (see Chapter 4). This implies that Ewbank sees welfare as an overarching theoretical concept. None of the veterinary surgeons in my interview study (Chapter 5) favoured this form of relation even though the concept of health (in terms of mental health) and especially well-being could be very similar. The category *Health as physical and psychological well-being* indicates that health and well-being could be synonymous.

definitions and this thesis deals only with theoretical definitions. An interesting research task in the future could be to analyse if there is a difference between the concepts of quality of life (in terms of assessments) and welfare assessment.

¹²⁹ In 1988 Broom presented his definition of welfare. Not until 2000 did he present a definition of health (Broom and Kirkden 2004). For Broom over the years, health has been an important part, although not defined, of the overarching concept of welfare.

This analysis favours the second way of relating the concepts with a possibility of adopting the first way. The fourth way is possible but I avoid it because I believe that three concepts is needed to pinpoint specific areas of concern for the clusters that I suggest (see Clusters, below).

Well-being as a useful concept

Despite the tradition in the subdivision of farm animals within the science of animal health and welfare I will argue for a use of well-being as a fruitful concept within the science. I will here give the arguments for such a position. Then I will attempt to elucidate what the term "well-being" could mean.

The strong force to avoid well-being within this subdivision can be shown through the following quotation.

I have earlier (1993) used this lexical fact as a reason for introducing a technical distinction between welfare (external positive/negative facts) and well-being (positive/negative feelings) in my analysis of human quality of life. Elements of that analysis are included also in this book (see Part III). However, on the advice given by some prominent animal welfare scientists, I have not retained this terminological distinction. (Nordenfelt 2006, Introduction p. xii)

The main arguments for avoiding well-being have been proposed by Broom.

- Since the Brambell Committee the main concept is welfare (Hughes 1989)
- Welfare and well-being have much the same meaning (at least in Britain) (Broom 1993; Broom and Johnson 1993)
- 3. Well-being is less precise than welfare (Broom 1996)
- The main concept in European legislation and science is welfare (Broom 1993; Broom and Johnson 1993; Broom 1996)

The habit of only using welfare seems to have been accepted among researchers concerned with farm animals (maybe with the exception of researchers in the United States (Gonyou 1993)). Broom's arguments do not hold. One argument has been that ever since the Brambell Committee the main concept should be welfare. This is an odd argument because the definition proposed by the Brambell Committee uses well-being in the *definiens*, which indicates that well-being is an important concept which should be analysed. Further, there are definitions of health with the term "well-being" in the *definiens* (Def Health 10, Def Health 12). One source of these definitions is *Baillière's Comprehensive Veterinary Dictionary*. In the area of laboratory animals well-being is widely used both in

conceptual papers within the science (see Clark et al. 1997a) and in legislation concerning laboratory animals (the Convention for Laboratory Animals, Council of Europe, and Swedish legislation). The concept of psychological well-being is well-established for the great apes. Bostock uses the term "well-being" in his book about zoo animals as the all-embracing term for animals, covering health, natural behaviour etc. (Bostock 1993). In the *Encyclopedia of Animal Rights and Animal Welfare* (Bekoff and Meaney 1998) well-being is recognised as a concept that is applicable to animals.

That welfare and well-being are semantically closely related (Broom and Johnson 1993) is true but needs to be reconsidered. Even if both concepts have much the same meaning in English, this is untrue with regard to the similar terms in German ("Tierschutz"¹³⁰ and "Wohlbefinden") and Swedish ("välfärd" and "välbefinnande"). In these two languages the terms have slightly different meanings. Among the informants in the interview study (Sweden) welfare and well-being were nevertheless regarded as synonymous by some. Other informants distinguished between the concepts, using well-being to refer to mental experiences and welfare to refer to the things we provide for animals. Some of the interviewed veterinary surgeons even opposed a use of the term "welfare" for animals. In their world, welfare was too much linked to human welfare in terms of a good job, a nice house and car etc. The Swedish välfärd normally refers to external material circumstances such as a job, a house, food on the table etc, whereas välbefinnande is more associated with feeling good (Språkdata Göteborgs universitet 1999).

The arguments put forward by Broom in support of his idea that well-being is less precise than welfare and that the main concept in European legislation is welfare can also be questioned. German legislation concerning animals bases its regulations on the concept of *Wohlbefinden* and the international Convention for Laboratory Animals also uses well-being. Preciseness of a concept depends on how it is defined. If both concepts are for example stipulated or explicated the same level of preciseness could be reached.

Of all the arguments against, I haven't found any one that properly convinces me as to why we should use only one term. Even Broom opens the door to using three concepts. Instead of well-being he uses the concept of feelings as a part of welfare. My claim is that the science of animal health and welfare should use both "well-being" and "welfare" and give these concepts separate meanings. The two main arguments are

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¹³⁰ Note my discussion of the terms in Chapter 6.

- Well-being is used in the science of animal health and welfare
- 2. Well-being may be given a meaning either because
 - a. the concept of welfare is too wide and better clarification is attained if two separate concepts are used, or
 - there are aspects which do not belong to the concept of health but need to be specifically pointed out as an important part of an overarching concept of welfare.

How should well-being be defined?

If my argument for using the term "well-being" is accepted one needs to further interpret what that term would refer to. A lexical definition is difficult to use because of the closeness of the corresponding terms for "welfare" and "well-being" in some languages. Also, a definition based on the use in the science of animal health and welfare seems difficult to find due to the differences between different sub-sciences (farm animals versus laboratory animals, for example). A stipulation is therefore needed, and here I will make as much use as possible of knowledge deriving from my three materials.

Well-being has in all the Chapters 4-6 played only a minor part, but taken together the following possible categories of definitions of well-being exist:

- 1. Well-being as feelings
- 2. Well-being as the animal being in a state of bodily and mental harmony with its environment
- 3. Well-being as a conglomerate concept

All the categories of definitions of well-being have their counterparts among the definitions of welfare. When well-being is a conglomerate definition there are no crucial differences between this definition and a definition within the category Welfare as a conglomerate concept. Well-being as feelings resembles Welfare as well-being. Well-being as the animal being in a state of bodily and mental harmony with its environment could be said to resemble Welfare as complete mental and physical health and being in harmony with the environment, depending on the interpretation of the latter. This means that no novel category exists that is not more or less covered by welfare categories.

Which category of definitions of well-being should we use, then? My claim is that well-being should be defined in terms of experiences or feelings. This has support in some languages in the root of the corresponding term in that language (for

example Swedish). The view of the informants was that well-being is experiences, which indicates that such a definition could gain acceptance even though there has been a strong urge within the science of animal health and welfare not to introduce well-being. Also, in the science of human health and welfare it is common to give well-being this interpretation. The other categories should be avoided. The second category in the list above shows the same vagueness in the term "harmony" as when the term is used in the corresponding category of welfare definitions. The third category is a conglomerate definition. One reason to stipulate well-being like this was to make it possible to separate a concept of wellbeing (referring to animal matters) from a concept of welfare (referring to environmental matters). By making this distinction one can differentiate between issues that deal with external matters (where a change in these matters need not involve a change in the animal) and issues that deal with internal matters (where a change in these matters will involve a change in the animal). I believe this distinction is important even if the use of a conglomerate concept was troublesome. I present a solution for this distinction in Clusters 3 and 4 which lack concepts with conglomerate definitions.

The problem of conglomerate concepts

There is a central problem with definitions that combine two or more different kinds of aspects, such as the conglomerate definitions of health, well-being and welfare. The conglomerate definition may be internally inconsistent. The aspects chosen for it could sometimes be in conflict with each other and problems could arise when the concept is operationalised due to the fact that one may need to make a choice as to whether one aspect is to be considered more important than the others (Nordenfelt 2006). I will here give a few examples of conglomerate definitions that are problematic. A conglomerate health definition which covers well-being and reproductivity will face problems when the animal reproduces out of boredom. A conglomerate concept of welfare covering coping functions, natural behaviour and feelings (as in Fraser's attempt to combine different values in welfare research) will face problems in those cases where the performance of natural behaviour causes feelings that are negative for the animal. A better solution is to work with a cluster of concepts which are related to each other where each of them can be defined separately (see next section).

Clusters

A cluster is not the same as a conglomerate concept. A definition is conglomerate if it construes a concept as a combination of properties x, y and z. One example is welfare defined as coping function, feelings and natural behaviour. A cluster, instead, consists of a number of separate concepts. A cluster of concepts can be summarised in the following way: health = def. x; welfare = def. y; well-being = def. z. The reason I call a set of concepts a cluster is that they refer to related

matters, such as is indeed the case with health, welfare and well-being. Concepts belonging to one and the same cluster must be carefully defined so that no inconsistencies appear between them.

It is worth noting that although a cluster contains separate concepts their references need not be totally separate. This is the case when, for instance, health is defined as a part of welfare. Here health and welfare are two separate concepts but the reference of the term "health" is a part of the reference of the term "welfare".

Another strength of a cluster, besides an easier approach to avoid inconsistency, is the possibility of demarcating different areas of concern. With a cluster different concepts could refer to separate specific matters. The number of concepts within the cluster determines how many distinct areas could be referred to. One problem with a conglomerate definition of a concept is that the concept tends to refer to "everything" and therefore does not pinpoint certain aspects or problems. For example, if a conglomerate view of welfare means that all matters concerning the animals are included in the concept of welfare, research could be needed on biological functions, subjective experiences, care and treatment of the animals etc. When problems arise one needs to specify in which area a problem occurs.

To form a good cluster I have used the following criteria. Combining these criteria will limit the possible number of clusters to a few.

- The definitions of the concepts should be consistent with each other
- The definitions of the concepts should be related to the ordinary language use within the science of animal health and welfare even though stipulations to enhance the usefulness could be made. The definition of a concept need not be common in the science of animal health and welfare to be regarded as a good definition.
- The definitions of the concepts should be useful for certain specified purposes within the science of animal health and welfare

Examples of useful distinctions that a cluster handles well are the distinction between biological processes and the experience of the biological processes (Clusters 1 and 2) and the distinction between how the environment affects the animal and how the animal reacts to or experiences the environment (Clusters 3 and 4). The numbered suggestions for clusters are tentative and need to be further discussed within the science of animal health and welfare. Among the clusters

presented are to be found new suggestions, elaborated versions of earlier dismissed proposals and already present clusters.

How many concepts should a cluster consist of? Most researchers within the subdiscipline farm animal health and welfare seem to favour only two concepts but I have shown that three concepts are possible and below I will attempt to demonstrate that three concepts do better than only two. In this thesis I will avoid four concepts (by for example introducing one of the other related concepts which I have presented in Chapters 4, 6 and 7). Quality of life has been excluded because the theoretical definitions of quality of life resemble the theoretical definitions of welfare and well-being. Animal protection and *viltvård* are included in *Welfare as suitable environment and care*. The time-factor is not applied in these clusters. Therefore one might argue that a concept that evaluates the timefactor needs to be added.

Which categories, then, are possible for the different concepts? (In Table 9 I have gathered all the categories of definitions of health and welfare with regard to role and species restrictions.) I have dismissed all conglomerate definitions. I have avoided the categories *Health as absence of disease* as well as *Health as physical and psychological well-being*. This leaves *Health as biological function*, *Health as mental and physical control* and *Health as ability to realise goals* to be used in clusters. For welfare I have excluded the category *Welfare as complete mental and physical health and being in harmony with the environment* because of vagueness and the same holds for the corresponding category of well-being. This leaves one category of well-being, *Well-being as feelings* (or subjective experiences), to be included in clusters. For welfare the categories 1-5 and 7-8 could be included in clusters (see Classification of welfare definitions, above).

What should the relations between the clusters be? There are few studies on the relation between well-being and welfare so I have chosen a couple of possible solutions. For health there seem to be two options: either as separate from the other concepts or as part of either welfare or well-being. I will now turn to the clusters — note that relations are still tentative and but the definitions within the clusters need further elaboration. I hope that this will stimulate future discussion within the science of animal health and welfare.

CLUSTERS 1. 1A AND 2

In these clusters (1, 1a and 2) I distinguish between biological aspects of the animal and mental aspects of the animal. Welfare could then be defined as one of the categories based on biological aspects of the animal while well-being could be defined as one of the categories based on mental aspects (welfare category 4 or 7 or well-being category 1). Welfare and well-being are seen as two different

spheres. This proposal may suit those researchers that argue that welfare should refer to the animal.

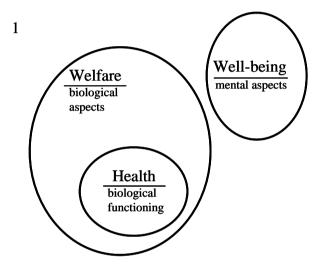


Figure 1. Cluster 1, see text for details.

In cluster 1 (Figure 1) the category *Health as biological function* is used. Health is seen as a part of welfare. A special case of cluster 1 is cluster 1a (Figure 2) which consists of the same categories for well-being and health as cluster 1 with the difference that welfare is defined as coping. This is Broom's conceptual scheme. I have only changed his concept of feelings to the concept of well-being.

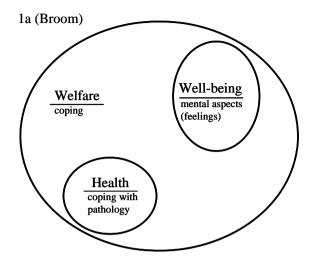


Figure 2. Cluster 1a, see text for details.

In cluster 2 the category *Health as mental and physical control* or the category *Health as ability to realise goals* can be used (Figure 3). Health is then regarded as a separate concept.

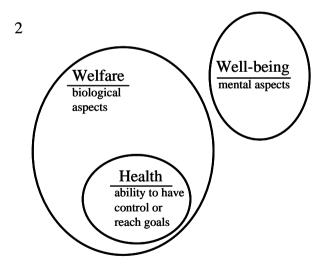


Figure 3. Cluster 2, see text for details.

CLUSTERS 3 AND 4

In clusters 3 and 4 I attempt to distinguish between the environment (as the animal is capable of experiencing it), mental aspects of the animal and biological aspects of the animal. Welfare could then be defined in terms of dealing with problems in the environment or in the care of the animal (such as the category *Welfare as suitable environment and care*). Well-being is defined in terms of experiences of the animal. The differences between cluster 3 and cluster 4 are similar to those between the cluster 1 and cluster 2, involving a change in the definition of health. Health is defined either as biological functioning or abilities (*Health as mental and physical control* or *Health as ability to realise goals*) (Figure 4-5). In these clusters none of the concepts can over-arch another. All concepts are separate.

The clusters are in line with the view of the informants as well as common language use in some countries. They can also explain the connection to the terms "viltvård" and "animal protection". Both these terms deal mainly with circumstances outside the animal. Viltvård deals with what humans do for wild animals and animal protection deals mainly with what humans do for animals in human care. Welfare could then, still with the focus on the animal's ability to experience, be an umbrella term for these two concepts.

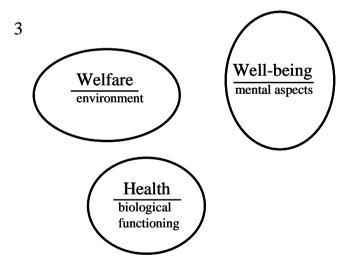


Figure 4. Cluster 3, see text for details.

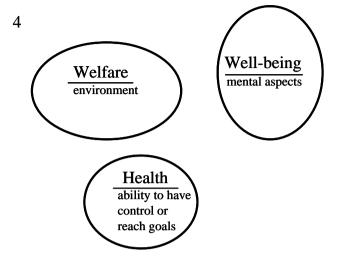


Figure 5. Cluster 4, see text for details.

Conclusions

I will now summarise this thesis. The literature study, the interview study with the veterinary surgeons and the study of national and international legislation show a great variety of theoretical definitions¹³¹ of the three concepts of welfare (13 presented), well-being (7 presented) and health (15 presented; see Appendix B for an overview of the different definitions which are to be found in Chapters 4 to 7). These definitions can be gathered in categories with regard to content and reduced for the purpose of making clusters. I will end with the following lists:

Health

- 1. Health as biological function
 - a. Health as normal biological function
 - b. Health as homeostasis
 - c. Health as productivity including reproduction
- 2. Health as mental and physical control
- 3. Health as ability to realise goals

Well-being

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 $^{^{131}}$ A reminder: I have not studied operational definitions although they are interesting and plentiful.

- 1. Well-being as feelings
 - a. Well-being as pleasure
 - b. Well-being as satisfaction of preferences

Welfare

- 1. Welfare as development according to natural selection
- 2. Welfare as coping
- 3. Welfare as fulfilment of needs
- 4. Welfare as natural behaviour
- 5. Welfare as maintained dignity of the animal
- 6. Welfare as suitable environment and care

Welfare as well-being is in my proposal transferred to the category Well-being as feelings.

I have avoided arguing for a certain definition for each of the concepts ruling out others. I therefore open the door to the possibility of having several fruitful definitions in use at the same time (for example in different areas of the science or because of the object of study). Still, I have questioned some of the definitions, made adjustments in the proposed categories of definitions and added some new categories. I claim that well-being should be accepted as a useful concept within the science, rejecting the argument against the use of the concept, and I have attempted to demarcate what well-being could refer to. The thesis shows that in the science of animal health and welfare no consensus exists as to which definition of health, welfare or well-being should be used.

An aim of this thesis, besides the systematisation of definitions, has been to show the variety of definitions with regard to species and to role for humans. I have shown the problematic nature of ascribing welfare to wild animals. In some areas the role is more primary than the species (for example in legislation). If the science of animal health and welfare is to have a concept that covers most animals then the definition should neither be role-laden nor species-laden. An example of a role-laden definition is a definition referring to human care of the animal (excluding some of the wild animals). An example of a species-laden definition is a definition referring to advanced mental abilities (excluding many species). If the science of animal health and welfare, on the other hand, is to have a specific concept (for example to avoid all unnecessary suffering or all bad husbandry) then the definition limits the number of species covered or the number of roles covered. A future research task is to investigate the strength of the distinction between roles and species. Is it only descriptive or could it also be normative?

The relations between the concepts of health, well-being and welfare have partly been neglected in the science of animal health and welfare, and I have therefore suggested a number of what I believe to be useful tentative clusters of the three concepts for the science of animal health and welfare to continue to develop. The reason to choose a cluster is to avoid conglomerate definitions which can easily lead to tensions and inconsistencies.

Conceptualisation is an ongoing process, both in the science of animal health and welfare and in the science of human health and welfare, and this thesis is fuel for the ongoing debate. Research in this area often uses a definition to justify the approach, therefore the deeper the discussion about the concepts the easier to formulate research questions.

To sum up, the main conclusions of this thesis are that:

- there are a variety of suggestions of definitions of the concepts of health, well-being and welfare, some well developed, others less developed but still referred to. One cannot therefore claim that there is a consensus what definitions to choose.
- the concepts of role and species are crucial in the analysis of the concepts of health, well-being and welfare. Having a certain role and belonging to a certain species have conceptual implications.
- to form clusters is a way of avoiding some of the inconsistencies in conglomerate definitions.

I believe that future research within this field should focus on:

- the concept of health. Several different suggestions exist, but discussion about what is the best definition is rare. Still, health has an important role, for example in clusters 3 and 4.
- the different roles of animals. Because having a certain role is of major importance in legislation a refinement of roles and the relation to species needs to be performed.
- whether the role and species are normative or not. Should the role of an animal dictate the concepts, or should the species of an animal, in certain contexts? We have examples of both in society. The role dictates the life of a guide dog. The species dictates what animals can be riding animals.
- the development of possible clusters and well-suited definitions within these clusters. Should there be different

- clusters in different sub-disciplines? This thesis is only a step towards this discussion, not a final conclusion of the discussion.
- the connection between theoretical definitions and operational ones.
- the relation to the science of human health and welfare. If a tendency in society is that animals are valued as fellow creatures, what consequences does this have for the concepts? Should we have similar concepts in both sciences? Attempts to achieve this have been made by several authors and gained strength through Nordenfelt's study (Nordenfelt 2006).

Appendix A

In the interviews I used the following interview guide (see Chapters 3 and 5). All the main questions in the interview guide had to be answered. But the wording and order of them differed according to the interview situation. Also additional questions may be used for clarification. Suggested additional questions are in italics.

Interview guide

I would like to ask you some questions about the concepts of health and welfare. Feel free to answer the questions thoroughly, and you can take your time. I am interested in your personal thoughts about the topic.

BASIC DEFINITIONS

How would you define welfare?

How would you define health (in relation to welfare)?

If well-being is not mentioned:

How would you relate well-being to the notions of health and welfare?

AREA OF DEFINITION

Are these definitions only applicable to animals?

All animals or which kind of animals?

Rees

What do you believe to be the most important difference in the concept of welfare for animals as compared to humans?

What do you believe to be the most important difference in the concept of health for animals as compared to humans?

RELATIONS OF CONCEPTS

What is the opposite of welfare? Describe such a situation.

What is the opposite of health? Describe such a situation.

Elaborate on the relation between the concepts of health and disease.

May you have a disease and still be considered as having good health?

Elaborate on the relation between the concepts of health and welfare.

Is perfect health a necessary condition for good welfare/well-being? What is the relation between terms such as impairment, defect, disability and disease?

MENTAL ASPECT

Is all that you have said about the concept of health or disease in animals also applicable to the mental health or disease of animals?

DEFINITIONS IN PRACTICE

How often do you have to decide if an animal has a disease or is in good health? What kind of situations?

How often do you have to decide if an animal has bad or good welfare?

What kind of situations?

May you give a good example of a situation where you have difficulty in deciding whether an animal is not healthy (or has a disease)?

May you give a good example of a situation where you have difficulty in deciding whether an animal lacks welfare?

Are there any values that you think one ought to share with you to accept your definitions?

Are there any aspects which are not covered by your original definitions but still may be important when you are deciding about good or bad welfare? Examples?

Are there any aspects which are not covered by your original definitions, but still may be important when you are deciding about good or ill health? Examples?

Your definition of health: What ethical consequences may it have?

Your definition of health: What practical consequences may it have? Your definition of welfare: What ethical consequences may it have? Your definition of welfare: What practical consequences may it

have?

Is it important for your daily work that you have thought about these definitions? Is a scientific definition of for example health neccessary for your daily work?

OTHER IMPORTANT WORDS

What relation is there between disease and pain or suffering?

How would you define the concept of stress?

How can it be related to your definitions of health or welfare?

How would you define (general) condition?

Do you use the concept of normal condition? In what sense? How do you decide the normal condition (reference)?

Do you use the concept of natural condition? In what sense? How do you decide the natural condition (reference)?

ALTERNATIVE DEFINITIONS

Do you think you share this view of health and welfare with all others of your profession or are there alternatives?

Which are the most important differences as compared to your definitions (theory/ideas)?

Interview guide in Swedish

INLEDNING

Intervjun kommer att gå till så att jag ställer frågor kring begreppen hälsa och välfärd. Svaren får gärna vara utförliga och du får gärna ta god tid på dig när du svarar. Jag är intresserad av dina högst personliga åsikter utifrån din gedigna erfarenhet inom området.

GRUNDDEFINITIONER

Hur skulle du vilja definiera välfärd (hos människa eller djur)?

Hur vill du definiera hälsa till skillnad från välfärd.

Om inte välbefinnande nämns i svaret:

Hur vill du placera in välbefinnande i det här sammanhanget?

DEFINITIONSOMR ÅDE

Gäller denna definition endast djur (eller människan)?

Vilka typer av djur?

Kan bin sägas ha välfärd?

Vad upplever du som den huvudsakliga skillnaden i begreppet välfärd för djur respektive människor?

Vad upplever du som den huvudsakliga skillnaden i begreppet hälsa för djur respektive människor?

BEGREPPENS RELATION

Vad är motsatsen till välfärd? Beskriv också en tänkt situation.

Vad är motsatsen till hälsa? Beskriv också en tänkt situation.

Beskriv relationen mellan begreppen hälsa och sjukdom.

Precisering:

Är en god hälsa förenligt med sjukdom?

Beskriv relationen mellan hälsa och välfärd.

Precisering:

Är full hälsa ett nödvändigt villkor för god välfärd (eller välbefinnande)?

Vilken är relationen mellan skada, defekt, handikapp och sjukdom?

MENTAL ASPEKT

Menar du att det du hittills har sagt om djurs hälsa och sjukdom även är tillämpligt på djurs mentala hälsa och mentala sjukdomar?

DEFINITIONERNA I VARDAGEN

Hur ofta ställs du inför problemet att avgöra sjukdom, hälsa, dålig respektive god välfärd?

Vilka typer av situationer är det?

Kan du ge ett typiskt exempel på en situation när du får problem med att avgöra om dålig hälsa (eller sjukdom) föreligger.

Kan du ge ett typiskt exempel på en situation när du får problem med att avgöra om dålig välfärd föreligger.

Finns det några grundläggande värderingar som du tror man måste dela med dig för att kunna acceptera dina definitioner?

Tror du det finns andra faktorer, vilka inte är en del av din grunddefinition, men som ändå kan vara avgörande när du beslutar kring vad som är god eller dålig välfärd [fråga även om hälsa]? Ge gärna exempel.

Vad får din definition av hälsa för etiska konsekvenser för behandlingen av djuren? (eller dina definitioner)

Vad får den för praktiska?

Välfärd, välbefinnande?

Är det i ditt dagliga arbete viktigt att du själv har funderat kring definitionerna vi här har talat om?

Är en strikt vetenskaplig definition av exempelvis hälsa nödvändig i ditt dagliga arbete?

VIKTIGA ÖVRIGA ORD (OM INTE REDAN NÄMNDA)

Hur är smärta och lidande begreppsligt relaterat till sjukdom?

Hur vill du definiera begreppet stress?

Hur kan begreppet stress relateras till dina definitioner av hälsa och

Hur vill du definiera begreppet kondition?

Använder du någonsin begreppet normalt tillstånd? På vilket sätt?

Använder du någonsin begreppet naturligt tillstånd? [finns inom biologin] På vilket sätt?

ALTERNATIVA DEFINITIONER

välfärd?

Tror du att du delar den här synen på hälsa och välfärd med andra i din profession eller finns det alternativa sätt att se på hälsa och välfärd?

Vilka är de viktigaste skillnaderna i relation till din teori?

Appendix B

A comprehensive list of all the referred definitions of health, well-being and welfare in the thesis.

Comprehensive list of the definitions

HEALTH

Def Health 1 = an animal's state as regards its attempts to cope with pathology where pathology is a detrimental derangement of molecules, cells, tissues and functions that occur in living organisms in response to injurious agents or deprivations (Broom and Kirkden 2004)

Def Health 2 = not merely the absence of disease or injury but the presence of robust characteristics, that is, the animal's ability to cope with the environment (Halverson 2001, p. 22)

Def Health 3 = freedom from disease and a state of normal physiology (McGlone 1993)

Def Health 4 = the animal being at ease without structural defects or functional impairment of the body (adapted from Baker and Greer (1980))

Def Health 5 = a state of equilibrium, where the different parts of the body are in harmony and balance with each other and the surrounding environment (Holmstedt and Holmstedt-Öh 1985)

Def Health 6 = a state where the organs of the body and the organ systems of the body are in harmony with each other and the surrounding environment (Ekesbo 1997, p. 25)

Def Health 7 = a positive state of 'soundness of body; that condition in which the functions are duly discharged' (Oxford English Dictionary 1973, p. 938), where an organism is in a 'sound bodily and mental condition' (Chambers Dictionary 1983, p. 577) (Hughes and Curtis 1997)

Def Health 8 [good health] = a soundness of body with all the organs, the muscles and the skeleton functioning normally (Henderson 1990)

Def Health 9 = a state of maximum economic production

Def Health 10 = a state of complete physical and social well-being and not merely the absence of disease or infirmity (Kelly 2000, p. 49)

Def [complete] Health 11 = when the individual A is in a bodily and mental state which is such that A has the second-order ability to realize all his or her vital goals given a set of standard or otherwise reasonable conditions (Nordenfelt 2006, p. 147)

Def Health 12 = a state of physical and psychological well-being and of productivity including reproduction (Blood and Studdert 1988)

Def Health 13 = absence of the diseases mentioned in (for example) Veterinary Epidemiology: Principles and Methods Martin, Meek and Willemberg 1987

Def Health 14 = absence of those diseases that disturb or hinder the animal's performance (or expected performance)

Def Health 15 = the animal's ability to have control of its situation in life, with regard to both coping systems and the forestalling, wherever possible, of the need for coping

WELL-BEING

Def Well-being 1 = the individual's subjective perception of its state – how it feels about its welfare or its state as regards its attempts to cope with the environment (Halverson 2001, p. 21)

Def Well-being 2 = both physical and psychological. Physical well-being is clinical health. Psychological well-being is reflected ... in behavioural well-being (Fraser 1989)

Def Well-being 3 = a complex and dynamic internal state that varies on a continuum and in its manifestations. It implies successful biological function, positive experiences, and freedom from adverse conditions (Clark et al. 1997a)

Def Well-being 4 = the internal somatic and mental state that is affected by what [the animal] knows (cognition) or perceives, its feelings (affect) and motivational state, and the responses to internal and external stimuli or environments (Clark et al. 1997a)

Def Well-being 5 = momentary experiences of the animal

Def Well-being 6 = absence of pain, suffering and exposure to harm

Def Well-being 7 = the state when the animal is in bodily and mental harmony with its environment (Lorz and Metzger 1999, p. 96)

WELFARE

Def Welfare 1 = a wide term that embraces both the physical and mental wellbeing of the animal (Brambell 1965, p. 9)

Def Welfare 2 = consists of the animal's positive and negative experiences. Important negative experiences are pain and frustration and important positive experiences are expressed in play, performance of appetitive behaviour and consummatory acts (Simonsen 1996)

Def Welfare 3 = is all to do with wants (Duncan and Petherick 1991)

Def Welfare 4 = a subject's welfare at a given point in time (t1) is relative to the degree of agreement between what he/it at t1 prefers (is motivated to do, wants, aspires after, hopes for, does not try to avoid, or is not indifferent to getting) and how he/it at t1 sees his/its situation (past, present and future) – the better agreement the greater welfare (Sandøe 1996)

Def Welfare 5 = maximizing reproductive success through sufficient self-expenditure

Def Welfare 6 = the fulfilment of needs

Def Welfare 7 = the individual's state as regards its attempts to cope with its environment (Broom 1986)

Def Welfare 8 = a state of complete mental and physical health, where the animal is in harmony with its environment (Hughes 1976)

Def Welfare 9 [animal welfare] = the avoidance of exploitation of animals by man by maintaining appropriate standards of accommodation, feeding and general care, the prevention and treatment of disease and the assurance of freedom from harassment, and unnecessary discomfort and pain (Blood and Studdert 1988)

Def Welfare 10 [welfare of animals] = the continous surveillance of the environment that human beings provide for animals that are in their care, and the promotion of what are considered from time to time by the community to be adequate rewards to the animals for the contribution that they make to the physical and psychological well-being of man (Blood and Studdert 1988)

Def Welfare 11 = using animals for human ends but minimizing pain, stress, suffering, and deprivation and enhancing the animals' wellbeing during their lifetimes (Reynnells and Eastwood 1997, p. 13)

Def Welfare 12 = the capacity of the animal to avoid suffering and sustain fitness (Webster 1994, p. 11)

Def Welfare 13 [Animal life quality] = the sum or integration of past, present and future states of well-being or the time-factor in combination with the positive and negative experiences of an animal (definition adapted from Simonsen (1996))

Legislation and preparatory works mentioned (in chronological order)

EUROPEAN COMMUNITY

Treaty of Amsterdam (1999)

Protocol on Animal Welfare, amendment to the Treaty of Amsterdam

EC Treaty

Declaration on the Welfare of Animals, annex to the Treaty of the European Union

COUNCIL OF EUROPE

European Convention for the Protection of Animals Kept for Farming Purposes (1976, abbr. Convention for Farm Animals, CETS No. 087)

Convention on the Conservation of European Wildlife and Natural Habitats (1979, abbr. Convention on European Wildlife, CETS No. 104)

European Convention for the Protection of Vertebrate Animals Used for Experimental and other Scientific Purposes (1986, abbr. Convention for Laboratory Animals, CETS No. 123)

European Convention for the Protection of Pet Animals (1987, abbr. Convention for Pet Animals, CETS No. 125)

Explanatory Report of the Convention on the Conservation of European Wildlife and Natural Habitats (1979, abbr. Convention on European Wildlife Explanatory Report)

SWEDISH LEGISLATION

The penal code (*Brottsbalken*, SFS 1962:700, in English: Ds 1999: 36)

Animal Welfare Act (*Djurskyddslagen*, SFS 1988:534)

Animal Welfare Ordinance (*Djurskyddsförordningen*, SFS 1988:539)

Hunting Act (*Jaktlagen*, SFS 1987:259)

Hunting Ordinance (*Jaktförordningen*, SFS 1987:905)

Environmental Code (*Miljöbalken*, SFS 1998:808)

Protection of Species Ordinance (Artskyddsförordningen, SFS 1998:179)

The ordinance concerning fishing (Förordningen om fisket, vattenbruket och fiskerinäringen, SFS 1994: 1716).

Protection of Plants Act (Växtskyddslagen, SFS 1972:318)

Prop. 1965:138 förslag till lag om ändrad lydelse av 16 kap. 13§ brottsbalken m.m., cited in Striwing 1998

Prop. 1972:122, Förslag till lag om ändring i brottsbalken 16 kap 13 §, cited in Striwing 1998

Prop. 1986/87: 58 Om jaktlag m.m.

Prop. 1987/88:93, Om djurskyddslag, m.m.

SOU 2002:86, Etisk prövning av djurförsök

Statens Jordbruksverks föreskrifter SJVFS 2005:3.

GERMAN LEGISLATION

The Basic Law

Animal Welfare Act (Tierschutzgesetz, 1986)

ENGLISH LEGISLATION

Dogs Act 1871

Protection of Animals Act 1911

Agriculture Miscellaneous Provisions Act 1968

Animal Health Act 1981

Animals (Scientific Procedures) Act 1986

Wild Mammals (Protection) Act 1996

Animal Welfare Act 2006

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