

"DO DOGS APE?" OR "DO APES DOG?" AND  
DOES IT MATTER? BROADENING AND DEEPENING  
COGNITIVE ETHOLOGY

By  
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*"Certainly it seems like a dirty double-cross to enter into a relationship of trust and affection with any creature that can enter into such a relationship, and then to be a party to its premeditated and premature destruction."<sup>1</sup>*

I. RAIN WITHOUT THUNDER, ANIMALS WITHOUT MINDS

In *Rain Without Thunder*, Gary Francione raises numerous important issues and takes on many important people.<sup>2</sup> The phrase "rain without thunder" made me think about the notion of animals without minds—animals without thoughts or feelings. This idea is troublesome for the nonhuman animals (hereafter animals) to whom it is attributed because it is much easier for humans to exploit animals when we believe that they don't have thoughts or feelings. I have been privileged to study various aspects of animal behavior for over 25 years, including animal cognition<sup>3</sup> (cognitive ethology), and have attempted to learn more about how the study of animal cognition can aid discussions of animal protection.<sup>4</sup> As a

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<sup>1</sup> LAWRENCE E. JOHNSON, A MORALLY DEEP WORLD: AN ESSAY ON MORAL SIGNIFICANCE AND ENVIRONMENTAL ETHICS 122 (1991).

<sup>2</sup> GARY L. FRANCIONE, RAIN WITHOUT THUNDER: THE IDEOLOGY OF THE ANIMAL RIGHTS MOVEMENT (1996).

<sup>3</sup> INTERPRETATION AND EXPLANATION IN THE STUDY OF ANIMAL BEHAVIOR (Marc Bekoff & Dale Jamieson eds., 1990); READINGS IN ANIMAL COGNITION (Marc Bekoff & Dale Jamieson eds., 1996); Marc Bekoff & Colin Allen, *Cognitive Ethology: Slayers, Skeptics, and Proponents*, in ANTHROPOMORPHISM, ANECDOTE, ANIMALS: THE EMPEROR'S NEW CLOTHES? 313 (Robert W. Mitchell et al. eds., 1997); COLIN ALLEN & MARC BEKOFF, SPECIES OF MIND: THE PHILOSOPHY AND BIOLOGY OF COGNITIVE ETHOLOGY (forthcoming 1997).

<sup>4</sup> Marc Bekoff, *Cognitive Ethology and the Treatment of Nonhuman Animals: How Matters of Mind Inform Matters of Welfare*, 3 ANIMAL WELFARE 75 (1994); Marc Bekoff, *Marking, Trapping, and Manipulating Animals: Some Methodological and Ethical Considerations*, in WILDLIFE MAMMALS AS RESEARCH MODELS: IN THE LABORATORY AND FIELD 31 (Kathryn A. L. Bayne & Michael D. Kreger eds., 1995); Marc Bekoff, *Naturalizing and Individualizing Animal Well-being and Animal Minds: An Ethologist's Naiveté Exposed?*, in WILDLIFE CONSERVATION, ZOOS, AND ANIMAL PROTECTION: A STRATEGIC ANALYSIS 63 (Andrew N. Rowan ed., 1996); Marc Bekoff, *Deep Ethology*, in INTIMATE RELATIONSHIPS, EMBRACING THE

field researcher, I am also interested in how field research can affect the lives of wild animals.<sup>5</sup> My studies have lead me to believe that most animals feel pain and do suffer, even if it is not the same sort of pain and suffering experienced by humans. Furthermore, my laboratory and field experience have clearly shown me that *all* behavioral research is interventive, even that which appears merely to be simple observation.

The issues with which those interested in animal rights and well-being must deal are numerous, diverse, difficult, and extremely contentious.<sup>6</sup> Reasonable people with different backgrounds but with common and deep interests in the protection of animals from human exploitation often disagree on even the most basic issues. However, there are some close parallels between the reasoning that underlies the use of animals by humans and the philosophy of some of those who study animal behavior. For many people who consider the problems related to protecting animals, the difficulty of coming up with an effective strategy for ending the exploitation of animals can get translated into the impossibility of doing so. There are some who will then conclude that there is no ethical problem at all and we can do what we want to animals, especially if experts disagree on important issues. Likewise, in the study of animal behavior, some slide from the claim that it is difficult to study animal sentience, to the claim that it is impossible to study animal sentience, to the claim that animals are not sentient, concluding that we can do whatever we want to them.<sup>7</sup>

What follows is a brief discussion of some aspects of my own research that bear on animal sentience and animal protection. First I will consider how the comparative study of animal minds informs discussions of animal exploitation, then I will discuss how humans interfere, often unknowingly, in the lives of wild animals. It doesn't matter whether "dogs ape" or "apes dog" when taking into account the worlds of different animals.

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NATURAL WORLD (Michael Tobias & Kate Solisti eds., forthcoming 1997); Marc Bekoff & Dale Jamieson, *Reflective Ethology, Applied Philosophy, and the Moral Status of Animals*, 9 PERSP. IN ETHOLOGY 1 (1991); Marc Bekoff & Dale Jamieson, *Ethics and the Study of Carnivores: Doing Science While Respecting Animals*, in CARNIVORE BEHAVIOR, ECOLOGY, AND EVOLUTION 15 (John L. Gittleman ed., 2d ed. 1996).

<sup>5</sup> Marc Bekoff, *Experimentally Induced Infanticide: The Removal of Birds and Its Ramifications*, 110 THE AUK 404 (1993); Marc Bekoff, *Marking, Trapping, and Manipulating Animals: Some Methodological and Ethical Considerations*, in WILDLIFE MAMMALS AS RESEARCH MODELS: IN THE LABORATORY AND FIELD 31 (Kathryn A. L. Bayne & Michael D. Kreger eds., 1995); Marc Bekoff & Andrzej Elzanowski, *Collecting Birds: The Importance of Moral Debate*, BIRD CONSERVATION INT'L (forthcoming 1997).

<sup>6</sup> See AN ENCYCLOPEDIA OF ANIMAL RIGHTS AND ANIMAL WELFARE (Marc Bekoff with Carron A. Meaney eds., forthcoming 1998), for numerous references to others' work and other source material.

<sup>7</sup> See Marc Bekoff, *Cognitive Ethology and the Treatment of Nonhuman Animals: How Matters of Mind Inform Matters of Welfare*, 3 ANIMAL WELFARE 75 (1994).

## II. COGNITIVE ETHOLOGY: THE EVOLUTIONARY, ECOLOGICAL, AND COMPARATIVE STUDY OF ANIMAL MINDS

The interdisciplinary science of cognitive ethology is concerned mainly with the evolution of cognitive processes in animals. Because behavioral abilities have evolved in response to natural selection pressures, ethologists favor observations and experiments on animals in conditions that are as close as possible to the natural environment where selection occurred. In addition to situating the study of animal cognition in a comparative and evolutionary framework, cognitive ethologists also maintain that field studies of animals that include careful observation and experimentation can inform studies of animal cognition, and that cognitive ethology will not have to be brought into the laboratory to make it respectable. Furthermore, because cognitive ethology is a comparative science, cognitive ethological studies emphasize broad taxonomic comparisons and do not focus on a few select representatives of limited taxa. Cognitive psychologists, in contrast to cognitive ethologists, typically work on related topics in laboratory settings, and do not emphasize comparative or evolutionary aspects of animal cognition. When cognitive psychologists do make cross-species comparisons, they are generally interested in explaining different behavior patterns in terms of common underlying mechanisms; ethologists, in common with other biologists, are often more concerned with the diversity of solutions that living organisms have found for common problems.

I offer but one example, namely social play in canids,<sup>8</sup> to show how scientists go about studying various aspects of animal cognition.<sup>9</sup> The study of animal play not only provides access into animals' minds, but also can provide information that is important in considering the treatment to which animals are subjected.

### A. *Social play behavior: cooperation, negotiation, and agreement*

Jethro (a dog) runs towards Sukie (another dog), stops immediately in front of her, crouches on his forelimbs (bows), wags his tail, barks, and immediately lunges at her, bites her scruff and shakes his head rapidly from side-to-side, works his way around to her backside and mounts her, jumps off, does a rapid bow, lunges at her side and slams her with his hips, leaps up and bites her neck, and runs away. Sukie takes wild pursuit of Jethro and leaps on his back and bites his muzzle and then his scruff, and shakes her head rapidly from side-to-side. They then wrestle with one another and part, only for a few minutes. Jethro walks slowly over to Sukie, extends his paw toward her head, and nips at her ears. Sukie gets up and jumps on Jethro's back and bites him and grasps him around his waist. They then fall to the ground and wrestle with their mouths.<sup>10</sup>

<sup>8</sup> "Canids" are members of the dog family.

<sup>9</sup> See *supra* notes 3-5 for other examples of the study of animal cognition.

<sup>10</sup> Marc Bekoff, *Playing with Play: What Can We Learn About Cognition and Evolution*, in *THE EVOLUTION OF MIND* (Denise Cummins & Colin Allen eds., forthcoming 1997).

This description of a play encounter between two dogs (it could be other canids, felids, nonhuman primates, or humans) shows that when they engage in social play they perform behavior patterns that are used in other contexts such as aggression, reproduction, and predation. They also use actions that are important for initiating and maintaining play, in this case "bows" (an animal crouches on his or her forelimbs and may wag his or her tail and bark). Social play in animals is usually a cooperative turn-taking venture, and an important question arises, namely: "How do animals negotiate cooperative agreements?"

In most species in which play has been observed, specific actions have evolved that are used to initiate play or to maintain play. These signals are used to modulate the effects of behavior patterns that are typically performed in other contexts, but whose meaning is changed in the context of play. These actions seem to function in negotiations between participants, the result of which is that they come to an agreement, possibly by sharing intentions, to engage in cooperative play rather than aggression or predation. There is no solid evidence that animals invite others to play and then exploit them. Furthermore, self-handicapping (for example, controlling the intensity of bites) and role reversals (dominant individuals assuming submissive roles during play) also have been observed.

In canids, available data strongly indicate that play-soliciting actions are used to communicate to others that actions such as biting, shaking of the head from side-to-side, and mounting, are to be taken as play and not as aggression, predation, nor reproduction.<sup>11</sup> Thus, bows are performed when the signaler wants to communicate a specific message about her desires or beliefs. While we cannot be sure that two dogs, for example, have beliefs about the effects of their behavior on other individuals, some data do suggest this possibility.<sup>12</sup> For example, suppose we wanted to know why Sukie permitted Jethro to nip at her ears; one explanation may be that Sukie believes Jethro is playing; and perhaps Jethro believes that Sukie believes that Jethro is playing. Providing answers to questions such as these is one of the challenges of research in animal cognition.

It is highly likely that a detailed consideration of social play will help promote the development of more sophisticated theories of intentionality, representation, and communication, from which we will learn more about individual beliefs, desires, abilities to make plans, and expectations about the future. Furthermore, all of these capacities are closely linked to how animals might suffer at the hands of humans, how they perceive the situations in which they currently find themselves or will find themselves, and how they react to them.

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<sup>11</sup> Marc Bekoff, *Play Signals as Punctuation: The Structure of Social Play in Canids*, 132 BEHAV. 419 (1995); Marc Bekoff & Colin Allen, *Intentional Communication and Social Play: How and Why Animals Negotiate and Agree to Play*, in ANIMAL PLAY: EVOLUTIONARY, COMPARATIVE, AND ECOLOGICAL PERSPECTIVES (Marc Bekoff & John A. Byers eds., forthcoming 1998).

<sup>12</sup> Bekoff, *supra* note 11.

B. *The study of behavior and the protection of animals*

Despite the close connection between cognitive ethology and animal welfare, the fundamental question that remains "is not, Can they *reason*? nor, Can they *talk*? but, Can they *suffer*?"<sup>13</sup> On this account, an individual's ability to experience pain, to suffer, or to experience anxiety provides a more compelling reason to grant her moral status and protection than does her ability to perform actions that favor cognitive explanations (that she has memories of past events, is aware of her surroundings, has the ability to think about things that are absent, or can have beliefs or desires and be able to make future plans).<sup>14</sup> This point needs to be stressed because at least at the moment it seems impossible to come up with any rigorous criteria that lead to the conclusion that specific cognitive abilities are morally relevant, whereas others are not.

Students of behavior can make important contributions to debates about animal protection. What might people interested in animal protection need from students of behavior? We still need basic information on behavior patterns of individuals of most of the species who are used in captive and field research, including: (i) descriptions of behavior and the compilation of species-typical behavioral repertoires (ethograms); (ii) information on the use of different sensory modalities;<sup>15</sup> (iii) reports on social organization with respect to species-typical group size and group composition (age and sex); (iv) data on patterns of social interaction—who does what to whom, how many times and when and where; (v) information on the use of space; (vi) data on how time is budgeted for different activities, as well as which activities are actively sought and which are of lower priority or avoided; and (vii) information on how different species are spatially distributed. It is also essential to gather detailed data on *individual differences* within species, for not all members of a recognized species behave similarly. By gaining a deeper understanding of the behavior of individuals, we will not be misled into thinking that how an animal looks is an indicator of whether or not they are experiencing pain or suffering.<sup>16</sup> Indeed, snap-shots of severely deprived animals can fool us into thinking that they are perfectly normal animals.<sup>17</sup> Developing an empathic feeling for the animals being studied will also be necessary. We need to go beyond animals who look like humans or act like humans, extending our

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<sup>13</sup> JEREMY BENTHAM, *THE PRINCIPLES OF MORALS AND LEGISLATION* ch. 17 § 1 (IV) n.1 (Hafner Pub. 1948) (1823).

<sup>14</sup> For discussions of animal pain, suffering, and anxiety see Margaret Rose & David Adams, *Evidence for Pain and Suffering in Other Animals*, in *ANIMAL EXPERIMENTATION: THE CONSENSUS CHANGES* 42 (Gill Langley ed., 1989); Patrick P. G. Bateson, *Assessment of Pain in Animals*, 42 *ANIMAL BEHAV.* 827 (1991); David DeGrazia & Andrew Rowan, *Pain, Suffering, and Anxiety in Animals and Humans*, 12 *THEORETICAL MED.* 193 (1991).

<sup>15</sup> There is no reason to think, for example, that olfactory and auditory stimulation could not be either enriching or disturbing. Individuals may suffer by being placed in environments that contain certain odors or sounds.

<sup>16</sup> Marc Bekoff, *The Ethics of Experimentation with Non-Human Animals: Should Man Judge by Vision Alone?*, 53 *THE BIOLOGIST* 30 (1976).

<sup>17</sup> *Id.*

data base beyond those species with which we are most familiar and thinking about the different sensory worlds of animals in which vision is not of great importance. For example, we still have little idea about the phylogenetic distribution of pain and suffering in animals.

To sum up briefly, animal cognition studies performed both under controlled laboratory conditions and in the field often are used to inform views on animal exploitation. Research not motivated by an interest in animal cognition but by a general interest in behavior often suggests that animals are "smarter" than we had previously realized. Many animals have expectations, desires, and beliefs, make assessments and choices based on fine discriminations among various alternatives, and have subjective feelings.<sup>18</sup> Although apparently clever behavior does not imply cognition, the attribution of mental predicates is irresistible in these cases. Even those who are skeptics about animal cognition fall into using cognitive language when discussing their work.<sup>19</sup> In some cases, they would not know what to say otherwise. Of course, we should be careful to note that data regarding cognitive abilities may have little to do with pain and suffering.

*C. "Do Dogs Ape?" or "Do Apes Dog?"  
Against Speciesistic Cognitive Ethology*

People often ask whether "lower" nonhuman animals such as dogs perform sophisticated patterns of behavior that are usually associated with "higher" nonhuman primates ("do dogs ape?"). This is a misguided question, as is the question "do apes dog?" because animals have to be able to do what they need to do in order to live in their own worlds. This type of speciesistic cognitivism also can be detrimental for many animals. If an answer to this question means that there are consequences in terms of the sorts of treatment to which an individual is subjected, then we really have to analyze the question in great detail. It is important to accept that there are species differences in behavior, and that behavioral differences in and of themselves may mean little to arguments about the rights of animals.

I should stress that the use of the words "higher" and "lower" to refer to different groups of animals can be extremely misleading and fails to take into account the lives and worlds of the animals themselves. These lives and worlds are becoming increasingly accessible as the field of cognitive ethology matures.<sup>20</sup> Irresponsible use of these words also can be harmful for many animals. It is a shame that a recent essay on animal use

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<sup>18</sup> Marc Bekoff & Dale Jamieson, *Reflective Ethology, Applied Philosophy, and the Moral Status of Animals*, 9 PERSP. IN ETHOLOGY 1 (1991); MARIAN S. DAWKINS, THROUGH OUR EYES ONLY? (1993); Ian J. H. Duncan, *Welfare Is To Do With What Animals Feel*, 6 J. AGRIC. & ENVTL. ETHICS 8 (Special Supplement 2, 1993).

<sup>19</sup> Bekoff & Allen, *supra* note 3; ALLEN & BEKOFF, *supra* note 3.

<sup>20</sup> See *supra* note 3.

in a widely read magazine perpetuates this myth by referring to animals "lower on the phylogenetic tree."<sup>21</sup>

Some primatologists often write as if theirs are the only subjects who are capable of recognizing the intentions of others. For example, Richard Byrne claims that "... great apes are certainly 'special' in some way to do with mentally representing the minds of others. It seems that the great apes, especially the common chimpanzee, can attribute mental states to other individuals; but no other group of animals can do so—apart from ourselves, and perhaps cetaceans."<sup>22</sup>

Byrne's claim is premature because there is little comparative data on nonprimates. To dismiss the possibility that at least some nonprimates are capable of having a theory of mind, many more data need to be collected and existing data about intentionality in nonprimates must be considered. Furthermore, Byrne's claim is based on very few comparative data derived from tests on very small numbers of nonhuman primates who might not be entirely representative of their species. The range of tests that have been used to obtain evidence of intentional attributions is also extremely small, and such tests are often biased towards activities that may favor apes over monkeys or members of other nonprimate species. However, there is evidence that mice can outperform apes on some imitation tasks.<sup>23</sup> These data do not make mice special, and I am sure few would claim that they should be used to spare mice and exploit monkeys. Rather, these results show that it is important to investigate the abilities of various organisms with respect to their normal living conditions.

#### D. *Field Research in Animal Behavior and Behavioral Ecology*

As noted above, ethologists favor observations and experiments on animals in conditions that are as close as possible to the natural environment. Students of behavior want to be able to identify individuals, assign gender, know how old animals are, follow them as they move about, and possibly record various physiological measurements including heart rate and body temperature. However, field study of animal behavior presents its own problems when the animals are detrimentally affected by the human presence.

Animals living under field conditions are generally more difficult to study than individuals living under more confined conditions, and various methods are often used to make them more accessible to study.<sup>24</sup> These

<sup>21</sup> Madhusree Mukerjee, *Trends in Animal Research*, SCI. AM., February 1997, at 86. See also Roger Crisp, *Evolution and Psychological Unity*, in INTERPRETATION AND EXPLANATION IN THE STUDY OF ANIMAL BEHAVIOR (Marc Bekoff & Dale Jamieson eds., 1990); Marc Bekoff, *What Is a "Scale of Life?"* 1 ENVTL. VALUES 253 (1992); Elliott Sober, *Morgan's Canon*, in THE EVOLUTION OF MIND (Denise Cummins & Colin Allen eds., forthcoming 1997).

<sup>22</sup> RICHARD BYRNE, *THE THINKING APE: EVOLUTIONARY ORIGINS OF INTELLIGENCE* 145 (1995).

<sup>23</sup> A. Whiten & R. Ham, *On the Nature and Evolution of Imitation in the Animal Kingdom: Reappraisal of a Century of Research*, 21 ADVANCES STUDY BEHAV. 239, 268-69 (1992).

<sup>24</sup> Marc Bekoff, *Marking, Trapping, and Manipulating Animals: Some Methodological and Ethical Considerations*, in WILDLIFE MAMMALS AS RESEARCH MODELS: IN THE LABORATORY

include practices such as: (i) handling, (ii) trapping using various sorts of mechanical devices that might include luring using live animals as bait, (iii) marking individuals using colored tags or bands, and (iv) fitting individuals with various sorts of devices that transmit physiological and behavioral information telemetrically (radio-collars, other instruments that are placed on an animal, or devices that are implanted).

Trapping is often used to restrain animals while they are marked or fitted with tags that can be used to identify them as individuals, or equipped with radio-telemetric devices that allow researchers to follow them or to record physiological measurements.<sup>25</sup> However, the trapping and handling of wild animals is not the only way in which their lives can be negatively affected: human presence, watching and filming them can influence their lives. What seem to be minor intrusions can actually be major intrusions. For example:

(1) Human presence alone can influence animal behavior.

Magpies who are not habituated to human presence spend so much time avoiding humans that this takes time away from essential activities such as feeding.<sup>26</sup>

(2) Birds and mammals react to the presence and noise of aircraft.

Adélie penguins exposed to aircraft and directly to humans show profound changes in behavior including deviation from a direct course back to a nest and increased nest abandonment.<sup>27</sup> Overall effects due to exposure to aircraft that prevent foraging penguins from returning their nests include a decrease of 15% in the number of birds in a colony and an active nest mortality of 8%.<sup>28</sup>

Trumpeter swans do not show such adverse effects to aircraft. However, the noise and visible presence of stopped vehicles produces changes in incubation behavior by Trumpeter females that could result in decreased productivity due to increases in the mortality of eggs and hatchlings.<sup>29</sup>

Helicopter surveys of mountain sheep that are conducted to learn more about these mammals disturb them (as well as other animals), greatly influence how they use their habitat, increase their susceptibility to predation, and also increase nutritional stress.<sup>30</sup>

(3) Tagging without considering the animal's body weight can cause changes in animal behavior. Changes in behavior due to tagging are called the "instrument effect."<sup>31</sup>

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AND FIELD 31 (Kathryn A. L. Bayne & Michael D. Kreger eds., 1995); Marc Bekoff & Dale Jamieson, *Ethics and the Study of Carnivores: Doing Science While Respecting Animals*, in CARNIVORE BEHAVIOR, ECOLOGY, AND EVOLUTION 15 (John L. Gittleman ed., 2d ed. 1996).

<sup>25</sup> See Bekoff, *supra* note 24, for references about various aspects of trapping and some of the horrors associated with this practice.

<sup>26</sup> *Id.*

<sup>27</sup> *Id.*

<sup>28</sup> *Id.*

<sup>29</sup> *Id.*

<sup>30</sup> *Id.*; see also, Steeve D. Côté, *Mountain Goat Responses to Helicopter Disturbance*, 24 WILDLIFE SOC'Y BULL. 681 (1996).

<sup>31</sup> Bekoff, *supra* note 24.



The foraging behavior of Little penguins (average mass of 1,100 grams) is influenced by their carrying a small device (about 60 grams) that measures the speed and depth of their dives.<sup>32</sup> The small attachments result in decreased foraging efficiency.

The weight of radio-collars can influence dominance relationships in adult female meadow voles. When voles wear a collar that is greater than 10% of their live body mass, there is a significant loss of dominance.<sup>33</sup>

However, when female spotted hyenas wear radio collars weighing less than 2% of their body weight, there seems to be little effect on their behavior.<sup>34</sup>

(4) Certain colors of tags can effect mating behavior.

Mate choice in zebra finches is influenced by the color of the leg band used to mark individuals, and there may be all sorts of other influences that have not been documented.<sup>35</sup> Females with black rings and males with red rings have higher reproductive success than birds with other colors.<sup>36</sup> Blue and green rings are especially unattractive on both females and males.

While there are many ethical problems that are encountered both in laboratory and field research, the consequences for wild animals may be different from, and greater than, those experienced by captive animals. This is so even for experiments that do not have to involve trapping, handling, or marking individuals. Consider experimental procedures that include: (i) visiting the home ranges, territories, or dens of animals; (ii) manipulating food supply; (iii) changing the size and composition of groups by removing or adding individuals; (iv) playing back vocalizations; (v) depositing scents (odors); (vi) distorting body features; (vii) using dummies; and (viii) manipulating the gene pool.<sup>37</sup>

All of these manipulations can change the behavior of individuals, including movement patterns, how space is used, care-giving, hunting and antipredatory behavior. These changes also can influence the behavior of groups of target and non-target individuals, including group hunting or foraging patterns, care-giving behavior, and dominance relationships. There also are individual differences in response to human intrusion.

Field researchers can, and should evaluate the behavioral effects of the techniques used to study wild animals to determine whether behavioral changes influence the data collected, and whether the subsequent use or misuse of these data influence decisions about how individuals are treated. In some cases, it might be impossible to justify the costs of this process and suitable alternatives should be developed. Without alternatives, some research questions might have to go unanswered for the time being. Unfortunately, suspension of research while searching for alternatives does not always occur. For example, on the University of Colorado's Boulder campus, many people were greatly disturbed because prairie dogs

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<sup>32</sup> *Id.*

<sup>33</sup> *Id.*

<sup>34</sup> *Id.*

<sup>35</sup> *Id.*

<sup>36</sup> *Id.*

<sup>37</sup> *Id.*

were killed in order to build a greenhouse for research in the botanical sciences.<sup>38</sup>

While we often cannot know about various aspects of the behavior of animals before we arrive in the field, our presence influences what animals do when we enter their worlds. What appear to be relatively small changes at the individual level can have wide-ranging effects in both the short and longterm, it is important to realize that we do make a difference that makes a difference. Nonetheless, field studies of many animals contribute information on the complexity and richness of animal lives that has been, and is, very useful to those interested in animal protection. But on-the-spot decisions often must be made, and knowledge of what these changes will mean to the lives of the animals who are involved deserves serious attention. A guiding principle should be that wild animals who we are privileged to study should be respected. When we are unsure about how our activities will influence the lives of the animals being studied, we should err on the side of the animals and not engage in these practices until we know the consequences of our acts.

### III. TOWARD A DEEP ETHOLOGY: CONVERSING WITH ANIMALS

Let me emphasize that studying nonhuman animals is a privilege that must not be abused. We must take this privilege seriously and accept all responsibility for breaches in our obligations to animals. First and foremost in any deliberations about other animals must be deep concern and respect for the dignity of individual lives in the worlds in which they live, and not respect motivated by who we want them be in our anthropocentric scheme of things. We also need to talk to the animals and let them talk to us. Surprises are always forthcoming concerning the cognitive skills of nonhumans and it is essential that people who write about animal issues be cognizant of and use these findings in their deliberations. As Paul Taylor notes, a switch away from anthropocentrism to biocentrism, in which human superiority comes under critical scrutiny, "may require a profound moral reorientation."<sup>39</sup> So be it.

My own laboratory and field experience has clearly shown me that all behavioral research is interventive, even that which appears merely to be simple observation. This fact must be taken seriously by all researchers. I believe that a "deep reflective ethology" is needed to make people more aware of what they do to nonhumans and to make them aware of their moral and ethical obligations to animals. I use the term "deep reflective ethology" to convey some of the same general ideas that underlie the "deep ecology" movement, in which it is asked that people recognize that they not only are an integral part of nature, but also that they have unique responsibilities to nature.<sup>40</sup> In my view, our unique responsibilities to the world mandate that a noninterventionist policy should be our goal in the future. It is important to accept that most nonhuman animals experience

<sup>38</sup> B. Hilliard, *CU's Stealthy Fumigation Challenged*, COLO. DAILY, October 26, 1992, at 8.

<sup>39</sup> PAUL W. TAYLOR, *RESPECT FOR NATURE: A THEORY OF ENVIRONMENTAL ETHICS* 313 (1986).

<sup>40</sup> See *DEEP ECOLOGY* (Michael Tobias ed., 1988).

pain and do suffer, even if it is not the same sort of pain and suffering that is experienced by humans, or even other nonhumans, including members of the same species.

Those who are now students will live and work in a world in which science increasingly will not be seen as a self-justifying activity, but as another human institution whose claims on the public treasury must be defended. It is more important than ever for students to understand that questioning science is not to be anti-science or anti-intellectual, and that asking how humans should interact with animals is not in itself a demand that humans never use animals. Questioning science will make for better, more responsible science, and questioning the ways in which humans use animals will make for more informed decisions about animal exploitation. By making such decisions in a responsible way, we can help to insure that we will not repeat the mistakes of the past, and that we will move towards a world in which humans and other animals may be able to share peacefully the resources of a finite planet. Perhaps we need to redefine science to include subjectivity, common sense, and feelings in conjunction with empirical data.

The problems with which we are faced concerning animal welfare are very complex and also novel, therefore keeping open minds, and more importantly, open hearts, is essential. Facile attempts to dance or to shuffle around difficult and unsavory situations in the name of science or within the constraints of the scientific method are not going to work in the future. We need to bite the moral bullet and incorporate the study of animal welfare into our scientific practices.

Despite the fact that there still is a long road to travel, change is in the wind. We and the animals who we use should be viewed as partners in a joint venture. We can no longer be at war with the rest of the world, and no one can be an island in this intimately connected universe. Taking animals seriously will result in a deeper examination and understanding of the animals' points of view, and this knowledge will inform further studies on the nature of human-animal interactions. If we forget that humans and other animals are all part of the same world, and are deeply interconnected at many levels of interaction, when things go amiss in those interactions, and animals are set apart from, and inevitably below humans, I feel certain that we will miss the animals more than the animal survivors will miss us. The interconnectivity and spirit of the world will be lost forever and these losses will make for a severely impoverished universe.

