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**Animal Welfare and
Environmental Ethics**

Animals: Mentality & Morals 2021 is a special publication arranged by the Colorado State University Department of Philosophy, during the failing health of Bernard E. Rollin and presented to him a few days before his death on November 19, 2021. The principal producer was Richard F. Kitchener. A small number of copies was printed, both hardbound and paper. There are seven contributors to the anthology. This anthology was first undertaken in 2016 but not published at that time. 129 pages.

Reprinted here is the Rolston contribution: "Animal Welfare and Environmental Ethics"



Bernard Rollin's concerns are mainly domestic and research animals, such as food animals, the traditional work animals, such as horses and mules, and those used experimentally. Tens of thousands of such animals have endured less suffering as a result of Rollin's seminal work. For this we are all grateful. He develops obliquely to this some ethical concern for wild animals, and he holds that as a spinoff from his ethics of sentient animals he can develop a "rich environmental ethic" (1995, p. 58). Here we will assess his animal welfare ethics prospective to challenging the adequacy of his extending that to environmental ethics.

1. Animal *Telos*

Animals are of moral concern because they have needs and interests. Animals have genetically encoded needs, which result in conscious interests whose frustration and satisfaction matter to the animal. These are experienced not only as pleasure and pain, but as frustration, anxiety, malaise, listlessness, boredom, and anger. This set of processes that constitute an animal's life is its *telos*. These functions and the needs they generate can be found out by observations. Those who interact with animals can tell when the cow or horse is "feeling well" (2004, p. 16). Scientifically, the role of ethology, the study of animal behavior, discovers these capacities in more extensive detail.

Rollin's use of *telos* is plausible though restricted to sentient animals that can be conscious of their interests, as much a psychological as a biological use. An animal's *telos* is "evolutionarily determined and genetically imprinted" (1981, p. 39), but Rollin is concerned only with the kinds of *telos* that produce conscious interests, felt experiences in animals. That makes his concept of *telos* more specialized than usual in philosophy of biology. Though developed intentionality is present only in a relatively few species of organisms, all of them, plants included, have a "life program" maintained genetically. Genes are proactive and cybernetic; they have a "telos," an "end." Biological functions are "teleonomic" (Ernst Mayr, 1974; Ayala, 1974). That Rollin

does not use *telos* in this wider sense will figure into his dislike of the claim that species have intrinsic value.

The usual account would be that genotypes cannot care, but some of the phenotypes they generate can. Genes cannot "intend" anything anymore than can the forces of natural selection operating on genes. Interestingly, however, some theoretical biologists and philosophers have begun using the term "intentional" as descriptive of biological information in genes. John Maynard Smith insists: "In biology, the use of informational terms implies intentionality" (Maynard Smith, 2000, p. 177). Such use goes back to the Latin: *intendo*, with the sense of "stretch toward," or "aim at." Genes are "coded for" a life function. Genetic information is "intentional" or "semantic" in this perspective, if it is for the purpose of ("about") producing a functional unit that does not yet exist. Genes are teleosemantic.

One would presume that such genetically encoded functions were shaped, originally at least, as an adapted fit to life in the wild, which is very different from life in the barnyard. "Husbandry involves both putting the animal into conditions as close as possible to the ideal conditions they evolved for *and* helping them when they need help" (2004, p. 12, Rollin's emphasis). The farmer will try to find ways to make confinement more congruent with an animal's welfare. Animals born to be wild and on their own might be frustrated by fences and the feedlot. Rollin suggests we might use genetic engineering to produce food animals happy in confinement. In response to the objection that such engineering would violate the *telos* or nature of the species in question, he argues that the genetic engineering of animals would create animals with a slightly different *telos*—in itself nothing objectionable, since it is not the *telos* but the interests that flow from it that are sacred. We might produce even basic changes in their *telos* (chickens content with their confined egg-laying in battery cages), so long as they are not made unhappier in result (1995, pp. 171-172).

Any animals that are genetically engineered for human use or even for environmental benefit should be no worse off, in terms of suffering, after the new traits are introduced into the genome than the parent stock was prior to the insertion of the new genetic material. (1995, p. 179)

Cows might be pleased that there are no predators against which they have constantly to stay on the alert. Domestic animals, cows and pigs, (and especially pets) have been bred for generations and perhaps their genes so modified by such breeding that they cannot live well, or live at all, unless the farmer or owner takes care of them. Rollin suggests that life for an animal under domesticated conditions is better than life in the wild. They gain benefits from the farmer (or pet owner).

Environmental ethicists agree that in raising food animals one ought not to introduce additional pain. But they also admire the skills of animals in the wild, and hold that humans ought to respect and conserve animals wild and free, where animals are on their own, without farmers to care for them. Domestic animals are breeds, as much as natural kinds. They are living artifacts kept in culture for so long that it is often not known precisely what their natural progenitors were. There is a big difference between a cow and a deer. The cow is a tamed animal; seeing a deer at the edge of the pasture is much more exciting than seeing a herd of contented grazing cows. A gazelle in flight from a leopard is pure wild grace, but a contented cow is a milk/meat factory for humans. A cow might suffer less than a gazelle but has a much compromised integrity (*telos*) from the once wild ancestral *Bos taurus* of Europe. A deer has a good of its own; a cow has been captured for human good.

"New systems should combine the best of traditional extensive agriculture, particularly husbandry, with technological advances that allow us to satisfy an animal's basic interests, constitutive of its *telos*" (Benson and Rollin, 2004, p. 18). But since Rollin approves of modifying the *telos* of food animals to keep them more peacefully domesticated, it is not so much the *telos* as the animal's well-being. Here Rollin could clarify whether the basic animal experience of interested concern is to be understood subjectively in terms of an agreeable or aversive quality of life from the perspective of the individual animal subject. Or is this *telos* at least partly objectively in terms of an animal's meeting species-typical levels of health, functioning, and normal mental development, such as those once attained as an adaptive fit in the wild, and still residual in the domesticated animal? Is not animal freedom, at least enough to pursue a good of their own on their own, constitutive of the *telos* of the kinds of animals with which Rollin is concerned?

Rollin answers: Yes:

It would also seem to be clearly wrong for us to take an animal that was by nature free roaming, say a gazelle or a tiger, or more dramatically, an eagle, and condition it to prefer living in a tiny cage and to abhor or fear open space. Even though we were producing no pain in the animal, and possibly conditioning it to feel a good deal of pleasure at being in its cage, we would consider such an action to be monstrous for moral reasons having nothing to do with pleasure and pain, namely, violating the animal's nature and dignity. (1995, pp. 34-35)

You can't do this with gazelles or eagles, but you can do it with cows and chickens. Environmental ethicists may want to reach the same conclusion, and notice that Rollin is recognizing an animal's nature and dignity, its interests in being free, as more basic and demanding of moral concern than the pleasure and pain he has before been taking as primary.

2. Animal minds

Rollin has analyzed and documented the bioscience that tends to confirm animal minds, and done this very effectively. Animal scientists need to recognize "that what need to be studied are thought and feeling, happiness and unhappiness, and mental and physical well-being" mixing the objective and the subjective. "Animal subjective experience is pivotal to animal welfare and animal happiness" (2005a, pp. 12-13). He sets forth in revealing detail how behaviorism led scientists to overlook or deny animal pain, and how both the common experience of those who care for animals and recent research in animal behavior and physiology confirms that animals are conscious of their pleasures and pains.

Animals are objects of moral concern, just as human beings are, unless we can find some morally relevant feature that distinguishes animals from humans. Rollin does conclude an account of animal mentation as revealed in animal behaviors: "These incidents bespeak and tease us with mysteries that tantalize and entice us but which, in the end, we will probably never fathom. Perhaps this strange combination of kinship and chasm separating us helps us stand in awe" (2005a, p. 3). There is enough kinship in mentation to require us to consider them morally; enough chasm to recognize that humans alone are moral agents with such responsibilities.

One such feature typically alleged both by animal users and philosophers is that animals are not rational and do not possess minds similarly enough to humans to make them of moral concern. Plants may be said to need water but have no interests as do animals. "What makes these needs interests is our ability to impute some 'mental life,' however rudimentary, to the animal, wherein, to put it crudely, it seems to care when certain needs are not fulfilled" (1981, p. 40). An animal has nerves, a brain, eyes, sense organs, mobility, which suggest collectively that the animal knows enough to search for food and to avoid danger, mental life enough to care.

Rollin's *The Unheeded Cry* is largely devoted to a critique of the positivistic behaviorism of animal behavioral psychologists who appear to deny "animal mentation." Rollin again appeals to his *telos* theory. Now, any simple minded caring has developed into the capacity to be "happy."

In my view, standards of care, husbandry, and use of all laboratory animals should be based on what makes an animal *happy*, not merely on avoiding pain and distress. 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. Each animal has a nature which is genetically and environmentally constrained, from which flow certain interests and needs, whose fulfillment or lack of it *matter* to the animal. (1989, p. 203)

"Happy" is a quite subjective term, seldom found in the accounts of animal behavior by biologists, who might speak of an animal's "nature which is genetically and environmentally constrained, from which flow certain interests and needs, whose fulfillment or lack of it matter to the animal." Rollin holds that, in the classical contract between farmers and their animals, farmers see to it that the life of their animals is better off than when their ancestors were once wild. Most of us, from our youth, recall that we drank milk from "contented" cows (as advertised), so perhaps there is some happiness in the barnyard.

Rollin mentions spiders and earthworms. "Where do you draw the line?" (1981, p. 57) How much mental power is needed? Do we swat flies? Step on cockroaches? "The question of when an animal can be said to have an interest, i.e. to have sufficient awareness that its needs matter to it, cannot be answered," at least with present science (1981, p. 42). Peter Singer once put it more provocatively: The line is somewhere between a shrimp and an oyster. Rollin concludes, with his pragmatic bent: "In fact, for practical purposes, I would be quite happy to set aside all cases where the slightest question exists and concentrate only on things that everyone clearly judges to be alive and to have interests" (1981, p. 58). So we set aside the insects and worms at least from any moral concern based on their mentation.

Rollin could be interested in some findings in recent neuroscience. "In the flatworm nearly all of the relevant genes (or a near proxy) to the nervous system also occur in humans (110 out of 116, or 95 percent)" (Conway Morris, 2015, p. 234). But there is difficulty evaluating how far these genes contribute to sentient interests, beyond reflex actions, and many of these genes are found much earlier with different functions.

Nevertheless, there are other ways to value worms. Concern for worms may arise when one learns "to value their complexity of structure, function, and evolutionary history and role," but this is an aesthetic value arising from the relationship of humans to worms, not an intrinsic value in the worms (1988, pp. 129-130). "An animal with no mentation or feeling has no welfare, or, if it does, has welfare only in the trivial sense that a plant does" (1995, p. 205). A trivial welfare is one that without mind doesn't matter. Yet Rollin also adds: "I would be prepared to argue that killing anything for absolutely no reason is *always* wrong, even crushing an insect" (1981, p. 58). Perhaps we should conclude that, pushed to extremes, Rollin does have a respect for life, with felt interests or without.

3. Animal Rights

"We have argued that there is no clear-cut line between men and animals from a moral point of view, and further that animals have moral rights following from their nature or *telos* if or even as men do" (1981, p. 93). This includes legal rights and Rollin has been influential in shaping such legislation and regulations. Rollin believes that "animals should not

legally be property, and the arguments that applied to humans not being owned apply, *mutatis mutandis*, to animals" (1995, p. 209).

Animals have a moral right to a basic quality of life when being used by humans.

My own argument for elevating the status of animals has been a relatively straightforward deduction of unnoticed implications of traditional morality. I have tried to show that no morally relevant grounds for excluding animals from the full application of our moral machinery will stand up to rational scrutiny. . . . By the same token, morally relevant similarities exist between us and them in the case of the "higher" animals. (1988, pp. 126-127)

Animals can be used as long as their interests are respected, never treated merely as a means to an end. An animal's right to life should be respected in the same way that a human's right to life should be respected, and can be defeated only in self-defense or the defense of others.

Animals have a right to life, but this ethic "does not try to give human rights to animals. Since animals do not have the same natures and interests flowing from those natures as humans do, human rights do not fit animals. Animals do not have basic natures that demand speech, religion, or property, thus according them these rights would be absurd" (2011, p. 113). A pivotal difference is that, despite their right to life, nevertheless, we can eat animals. Their death is a harm to them—their biggest possible harm one might think—but this is a fair price for animals to pay if they have been given proper care up to the point of their death. Rollin thinks of this as a kind of "contract," "the contractual, husbandry dimension of agriculture" (1995, p. 177). "Thus traditional agriculture was roughly a fair contract between humans and animals, with both sides being better off in virtue of the relationship" (2011, p. 109).

Rollin often has theoretical or in-principle ideals that he concedes are unlikely to be accepted as current practice, "socially and psychologically impossible in our culture" (1981, p. 93). In result in practice he adopts far more moderate moral principles as a basis for guiding social practice, for example those of traditional farmers. His justification is that there is a real possibility of extending traditional and still current practices enough to improve the plight of farm animals. So

in the contractual, husbandry dimension of agriculture, the farmer takes care of the cows and pigs, recognizing their rights, and then eats them, or sells them to be eaten. At this point, the animals have no right to life; they have traded their ongoing right to life for the up-to-this-point right to a good life at the hands of the farmer—from their birth to the feedlot and slaughter house.

No animals are capable of considering such contractual trading, of course, so this requires stretching considerably the idea of a “fair contract,” along with considerable shrinking of his claim “that there is no clear-cut line between men and animals” and “that animals have moral rights following from their nature or *telos* if or even as men do” (1981, p. 93). Essentially, his claim that “animals should not legally be property” any more than humans has evaporated (1995, p. 209).

Regarding the use of animals in research, Rollin prefers a utilitarian to a rights standard. Humans are not likely to give up the benefits that they derive from using animals in research, in medical contexts for example. So, while we should apply the same standard that we apply to humans, this is only a regulative ideal, and it is not practical to seek to have this ideal realized in our current society. What we can work for is the improvement in the standards of animal use. With this caveat, Rollin moves to what he calls a “middle position” about animals’ rights. We work for reform in the use of research animals, rather than try to abolish such research. This is strategically more effective for improving their lot. Appropriately reformed exploitative practices are ethically acceptable.

Environmental ethicists are routinely meat-eaters, though some are vegetarian. Their arguments are typically that eating and being eaten is the way ecosystems work.

Do Rollin’s concepts of animal rights have any application to the world of nature at large? Rollin asks “Must We Police Creation?” but offers no clear answer to the question. Should we stop a house cat from killing a bird? “It seems plausible to suggest that we have a duty to stop a well-fed house cat from killing a bird. . . . True, the cat may have an interest in killing because killing behavior is natural to it; on the other hand, this doesn’t seem to trump the bird’s more basic right to life” (1981, p. 62) “Are you going to stop snakes from eating mice?” (1981, p.

58). Plants and bacteria have no interests and therefore no rights (1981, p. 42).

Is it our duty to stop predators from killing prey? That is more difficult. It is in the animal's nature to kill by predation, it does so to survive; so though it would be a better universe if this were not the case, it is not clearly typically within the scope of our moral duties to correct what has been called natural evil. (1981, p. 62)

There is no sense of rights in animals, but when humans interact with them birds can have rights. Rollin can, as we have noticed, readily move from socially impossible ideals in agriculture to accommodating their being eaten, hoping pragmatically to reduce their suffering. In wild nature he dislikes predation, but accepts this difficult natural evil as outside the scope of moral duties.

Environmental ethicists will enter here to insist that there are considerations in a more complex environmental ethic that cannot be reached by conferring rights on them or lamenting natural evils. Predation is not a natural evil but fits into the larger natural processes of conflict and resolution. From the perspective of the prey, it is bad to be eaten. The disvalue to the prey is, however, a value to the predator, and, with an eco-systemic turn, perspectives change. The violent death of the hunted means life to the hunter. There is not value loss so much as value capture; nutrient materials and energy flow from one life stream to another, with selective pressures to be efficient about the transfer. The pains of the prey are matched by the pleasures of the predator. Should we register the amounts of each to compute the net? Or is Rollin's hedonistic criterion perhaps not the most relevant one? We need to ask what biological achievements result from predation?

The wolf is not a big, bad wolf; it is one of the most handsome animals on Earth. In Africa, tourists most want to see the big cats. Florida school children chose the lithe, supple panther as their state animal. We admire the muscle and power, the sentience and skills that could only have evolved in predation. Such aesthetic experience is in the eye of the human beholder, but the biological achievements are objective in cat and wolf. Are these good products of a bad process? Or does something about the creative process require predation?

Autotrophs synthesize their own food; heterotrophs eat something else. Could we have had a world with only flora, no fauna? Possibly not, since in a world in which things are assembled something has to disassemble them for recycling. In any case, no one thinks that a mere floral world would be of more value than a world with fauna also. A photosynthetic world would be a largely immobile world. In a floral world, there would be no one to think. Heterotrophs must be built on autotrophs, and no autotrophs are sentient or cerebral. Some species must sit around and soak up sunlight; other species will capture this energy to fuel mobility. Still other species will rise higher on the trophic pyramid, funded by capturing resources from below for greater achievements in sentience, cognition, and mobility. In a world without predation, none of the animals that Rollin admires would have evolved.

Could there have been only plant-eating fauna, only grazers, no predators? Possibly, though probably there never was such a world, since predation preceded photosynthesis. An Earth with only herbivores and no omnivores or carnivores would be impoverished. The animal skills demanded would be only a fraction of those that have resulted in actual zoology—no horns, no fleet-footed predators or prey, no fine-tuned eyesight and hearing, no quick neural capacity, no advanced brains. The cougar's fang sharpens the deer's sight, the deer's fleet-footedness shapes a more supple lionness.

The individual prey, eaten, loses all; but the species may gain as the population is regulated, as selection for better skills at avoiding predation takes place, and the prey not less than the predator will gain in sentience, mobility, cognitive and perceptual powers. Being eaten is not always a bad thing, even from the perspective of the prey species. The predator depends on a continuing prey population; they have entwined destinies. A world without blood would be poorer, but a world without bloodshed would be poorer too.

Wild nature is filled with "natural evil"? The coming of Darwin is often thought to have ruined nature's harmonious architectures, leaving us a "nature red in tooth and claw." But contemporary biologists see much further, deeper. Darwin finds a nature pressing for adapted fit, and this includes predation. Take away the friction, and would the structures stand? Would they move? Would they evolve? None of life's heroic quality is possible without this dialectical stress. This is the

necessary prolife creative process, and of vital systemic value. We agree with Rollin that we ought to kill food animals humanely. Meanwhile we face the paradox that without predation in our past we should not be here to deliberate the question at all.

Environmental ethicists here will argue that “rights” language, though it may suitably be applied to farm and research animals, which do have felt interests and conscious preferences, is not suitable for most forms of life. A better vocabulary is to speak of “values” of various degrees and kinds, some instrumental, some intrinsic, some systemic, though Rollin is resolutely against speaking of intrinsic value in nature.

4. Companion Animals

With pet animals there is “something like a social contract, in which the animals give up their free, wild, pack nature to live in human society in return for care, leadership, and food which man ‘agreed’ to provide” (1995, p. 154). Our custodial obligations to our companion animals should provide us with an ideal model for the future evolution of animal ethics. Rollin sets “the moral primacy of those with whom we enjoy relationships of love and friendship—*philia* in Aristotle’s term. . . . Only the animals with whom we enjoy *philia*—companion animals— can be treated with unrestricted moral concern. This ought to be accomplished, both for its own sake and as an ideal model for the future evolution of animal ethics” (2005b, p. 105).

If our relationship with animal friends and objects of love is conceptually and logically similar to such relationships with humans, we can now demand parity in the treatment of both human and animal objects of *philia*. If we can accomplish this, we can continue to evolve animal ethical theory for all animals by pointing to morally relevant similarities among companion animals and animals we currently exploit in a matter sufficient to shake our taking such exploitation for granted. (2005b, pp. 120-121)

An environmental ethicist will reply that this may be an ideal for pet animals, it is quite inadequate as a model for a more inclusive animal ethics, even those in the barnyard or pasture. Pets are given names. My maternal grandfather, an Alabama farmer, would give names to horses, mules, and milk cows; but he would never let us give names to

animals that we expected to eat. That is too much familiarity. Much less is this any ideal for dealing with wild animals, migrating geese, endangered species, elephants or rhinos. One cannot be friends with whales, rattlesnakes or wolves.

We do want to claim that humans and all the non-human forms of life are, globally speaking, in one community of life; perhaps we use the metaphor of a global village, or think of other species as our companions on biospheric Earth. John Muir once exclaimed: "How hard to realize that every camp of men or beast has this glorious starry firmament for a roof! . . . We all dwell in a house of one room . . . and are sailing the celestial spaces (Muir, 1938, p. 321). But this companionship is not friendship, *philia*.

5. Biospheric Earth

Environmental ethics is an account of values in and duties to the natural world displayed on this biospheric Earth on which humans reside. Environmental ethics advocates respect for life, beyond a respect for sentience. Such respect is multi-leveled, multi-dimensional from cell to planet. Whatever his admirable concern for more caring human concern for domestic, food, and research animals, both at home and abroad (1988, pp. 139-142), Rollin has no serious concern for such an environmental ethics. Rather, he can ridicule it. "Environmental philosophy" is "an odd amalgam of sound, genuine concern with fouling our own nest (prudence); overblown ethical system building designed to provide a new ethic where none is needed; and wild metaphysical pontification designed to ground the unneeded ethic." The main mistake in this "potpourri" is that living nature is portrayed as "intrinsically valuable" (1995, p. 47).

A group of environmentally concerned philosophers have felt compelled to generate a radically "new ethic" for the environment and have argued that natural objects (concrete and abstract)—ecosystems, rivers, species, and nature itself—possess intrinsic or inherent moral value and are direct objects of moral concern to which we have moral obligations. Indeed, for many of these theorists, these entities have higher value and more inherent worth than "mere individuals," human or animal." (1995, p. 9)

These remarks are made in the context of a book about what Rollin calls "The Frankenstein syndrome," which he takes as a metaphor

for current and impending technologies that push us past our comfort zone, often ethical traditions in our traditional and contemporary worldviews. Elsewhere in the book his remarks are insightful, facing up to forthcoming ethical changes. But now the “radically new” environmental ethics seems to push Rollin himself beyond his own traditional comfort zone.

Rollin surveys the levels of biological processes, submicroscopic to global, often with appreciation. “The humblest organisms often contain great beauty—in symmetry, adaptation, complexity, or whatever” (1988, p. 135). Yet his conclusion is rather startling: Never mind, nothing matters. That is, most of natural history is without mind, and until conscious mind with its felt experience emerges, nothing matters. After mind emerges, then much matters—even everything matters—relationally to the preferences of such minds.

At this point, when I value natural history at multiple levels and scales, I become Rollin’s target. He details “pervasive errors in Rolston’s arguments.” The first is that I confuse intrinsic value in nature with aesthetic value. “Just because a natural (or an artificial) object produces aesthetic experiences in us, it does not follow that such an object is intrinsically valuable in the sense of possessing value within it independently of a valuer. . . . That which is valued aesthetically logically entails a dyadic relationship with another, that is, he or she who experiences the value” (p. 53).

Rollin is quite right that I value various natural things and processes aesthetically and that this is a relational value. Beyond that, and without confusion, I further value various natural things, such as plants as having a good of their own, whether I am present or not. I value species as processes by which such goods in both animals and plants are ongoing from one generation to another, independently of my presence. I value ecosystems as the generative context and matrix in which these processes are supported and elaborated.

My next error is “a sophisticated example of the genetic fallacy.” By my account (which Rollin quotes), “From a short-range, subjective perspective we can say that the value of nature lies in its generation and support of human life and is therefore only instrumental. But from a longer-range, objective perspective, systemic

nature is valuable intrinsically as a projective system, with humans only one sort of its projects, though perhaps the highest. The system is of value for its capacity to throw forward (pro-ject) all the storied natural history. On that scale humans come late and it seems short-sighted and arrogant for such latecomers to say that the system is only of instrumental value for humans" (1995, p. 55). I claim that one ought to value the creative genesis in evolutionary natural history. But this commits the genetic fallacy, because the causes of value may not themselves be valuable.

Again I agree that some causes in a chain of events that results in value may not themselves be valuable. But some may. If one is valuing a goose that lays golden eggs, one values both the product, the eggs, and, even more, the process, the goose. One is quite short-sighted to value only persons and mammals intrinsically and the previous three billion years of life on Earth, and life continuing, only instrumentally, in their dyadic relationship to late-coming conscious species. To recognize and value this genesis is not a genetic fallacy.

My third error is using false metaphorical analogy. I claim, "Non-sentient nature is creative, self-preserving, self-repairing, dynamic, adaptable, all of which are evidenced by natural history" (Rollin summarizing Rolston, 1995, p. 56). "Value is not just an economic, psychological, social and political word, but also a biological one. Value_{or} is what is good for an organism. . . . that well being is for the organism a telic end state, an intrinsic value, not always a felt preference. Survival value lies at the core of evolutionary adaptation" (Rollin quoting Rolston, 1995, p 57). This "moves illegitimately from the presence of some analogies between nonsentient nature and sentient creatures" (1995, p. 57). That a mammal preserves itself, repairs its wounds, and is adaptable matters to it, but nothing matters to plants or species. If it isn't felt, it doesn't matter. I am "grafting onto nature a mystical intrinsic value that can be buttressed only by poetic rhetoric" (p 58-59) when I transfer these activities that matter to sentient creatures to seemingly similar activities in non-sentient organisms.

Rollin endorses intrinsic value for the higher animals, on grounds that they have conscious concerns on their own that matter them. But he balks at attributing "a mystical intrinsic value" (1988, p. 139) to anything nonsentient, such as lower animals, plants, species,

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nature is valuable intrinsically as a projective system, with humans only one sort of its projects, though perhaps the highest. The system is of value for its capacity to throw forward (pro-ject) all the storied natural history. On that scale humans come late and it seems short-sighted and arrogant for such latecomers to say that the system is only of instrumental value for humans" (1995, p. 55). I claim that one ought to value the creative genesis in evolutionary natural history. But this commits the genetic fallacy, because the causes of value may not themselves be valuable.

Again I agree that some causes in a chain of events that results in value may not themselves be valuable. But some may. If one is valuing a goose that lays golden eggs, one values both the product, the eggs, and, even more, the process, the goose. One is quite short-sighted to value only persons and mammals intrinsically and the previous three billion years of life on Earth, and life continuing, only instrumentally, in their dyadic relationship to late-coming conscious species. To recognize and value this genesis is not a genetic fallacy.

My third error is using false metaphorical analogy. I claim, "Non-sentient nature is creative, self-preserving, self-repairing, dynamic, adaptable, all of which are evidenced by natural history" (Rollin summarizing Rolston, 1995, p. 56). "Value is not just an economic, psychological, social and political word, but also a biological one. Value_{or} is what is good for an organism. . . . that well being is for the organism a telic end state, an intrinsic value, not always a felt preference. Survival value lies at the core of evolutionary adaptation" (Rollin quoting Rolston, 1995, p 57). This "moves illegitimately from the presence of some analogies between nonsentient nature and sentient creatures" (1995, p. 57). That a mammal preserves itself, repairs its wounds, and is adaptable matters to it, but nothing matters to plants or species. If it isn't felt, it doesn't matter. I am "grafting onto nature a mystical intrinsic value that can be buttressed only by poetic rhetoric" (p 58-59) when I transfer these activities that matter to sentient creatures to seemingly similar activities in non-sentient organisms.

Rollin endorses intrinsic value for the higher animals, on grounds that they have conscious concerns on their own that matter them. But he balks at attributing "a mystical intrinsic value" (1988, p. 139) to anything nonsentient, such as lower animals, plants, species,

ecosystems, the biosphere, because nothing matters to them. This would “leave us with a ‘whole new ball game’—and one where we do not know the rules” (1995, p. 61, 1988, p. 131).

Rollin repeatedly refers to the generically based natures of animals, which result in a natural kind. But he dismisses “species” as having status enough to be valuable as such. Here are Rollin’s rules for valuing species: “Moral status for individual animals would arise from their sentience. Moral status of species and their protection from humans would arise from the fact that a species is a collection of morally relevant individuals; moral status would arise from the fact that humans have an aesthetic concern in not letting a unique and irreplaceable aesthetic object (or group of objects) disappear from our *Umwelt* (environment)” (1988, p. 131, cf. 1995, p. 59). So moral concern for sentient species is lest their individual members suffer. Moral concern for worms and plants is lest humans lose aesthetic experience.

Assuming that they suffer about equally, there is no difference between killing a turkey and a whooping crane, unless one adds in the aesthetic loss with whooping cranes. “Thus, from the point of view of primary loci of moral concern, killing *any* ten Siberian tigers is no different from killing the *last* ten. Our greater horror at the latter stems from invoking the relational value dimension to humans – no human will ever again be able to witness the beauty of these creatures; our world is poorer in the same way that it would be if one destroyed the last ten Van Goghs” (1988, p. 135).

But many endangered species, such as plants or insects, are comprised of individuals without conscious experience. Rollin continues, “This still leaves us with the case of species extinction involving nonsentient species—plants or animals in which we have no reason to suspect the presence of consciousness. Such extinction is not necessarily an evil. On the other hand, most cases of extinction presumably would be cases of (relational) evil because nonsentient species that do not harm us or other sentient creatures directly or indirectly are at worst neutral, and their loss is both an aesthetic loss for their uniqueness and beauty . . . or a loss of a potential good whose value is not yet detected” (1988, p. 135).

Species cannot matter in themselves because a species is

nothing but a collection of individuals. Rollin cannot entertain the dynamic concept of species as an ongoing form of life at a level transcending, though necessarily including individual organisms. For most biologists, however, the better logic is to interpret reproduction as the species keeping up its own kind by reenacting itself again and again, individual after individual. It stays in place by its replacements. Consider reproduction, certainly fundamental to biology. Reproduction is, we might first say, is a need of individuals. But any particular individual can flourish somatically without reproducing at all, indeed a female may be put through duress and risk or spend much energy reproducing.

An animal is selected to be a good adapted fit, which by the Darwinian account means that the animal has capacities for differentially leaving more of its offspring in the next generation. A female grizzly bear may desire to have cubs (if not bullied into mating by the boar), but she does not bear cubs to be healthy herself, any more than a woman needs children to be healthy. She will be put through much duress to bear and rear the cubs, even defending them at cost to her life. When she cares for her cubs, the "telos" that "matters" to her is the dynamic flowing of her form of life into the next generation. Her cubs are *Ursus arctos horribilis*, threatened by nonbeing, recreating itself by continuous performance. A species in reproduction defends its own kind.

A female animal does not have mammary glands nor a male animal testicles because the function of these is to preserve its own life; these organs are defending the line of life bigger than the somatic individual. The lineage in which an individual exists dynamically is something dynamically passing through it, as much as something it has. The locus of the intrinsic value—the value that is really defended over generations—seems as much in the form of life, the species, as in the individuals, since the individuals are genetically impelled to sacrifice themselves in the interests of reproducing their kind. What they "care about" is something dynamic to the specific form of life; they are selected to attend to the appropriate survival unit—which, as most biologists recognize, is species.

Selfish genes these reproducing individuals may have, but the genes "care more about" the species (so to speak) than the individual and its concerns. The solitary organism, living in the present, is born to lose; all that can be transmitted from past to future is its kind. Although

selection operates on individuals, since it is always an individual that copes, selection is for the kind of coping that succeeds in copying, that is reproducing the kind, distributing the information coded in the gene more widely. Survival is through making others, who share the same valuable information. The organism contributes to the next generation all that it has to contribute, its own proper form of life, what it has achieved that is of value about how to live well its form of life.

Survival is of the better sender of whatever is of genetic value in self into others. Survival of the fittest turns out to be survival of the senders. What genes are "for" is to be ancestors in an indefinitely long line of descendant genotype/ phenotype reincarnations. Genes get spread around, or distributed by organisms who do not simply live for their "selves," but to spread what they know to other selves. Defenders of species consider this activity as real, as valuable, as the felt experiences of well developed mammals.

Rollin continues to complain about Rolston's "repugnant" and "devastating" mistake, following from Rolston's account of species.

Furthermore, the intrinsic value view can lead to results that are repugnant to common sense and ordinary moral consciousness. Thus, for example, Rolston has discussed the case of humanly introduced goats, once domestic but now feral, on San Clemente Island who were eating an endangered species of plant. According to Rolston, if one couldn't stop the goats from eating the plants, it would be not only permissible but obligatory to kill the animals in order to protect the plant, because in one case we would lose a species, in another "merely" individuals. (1995, p. 60)

I did indeed advocate this, as did the U.S. Fish and Wildlife Service. San Clemente Island is far enough off the coast of California for endemic species to have evolved in the isolation there, found nowhere else on Earth. The island also has a population of feral goats, introduced by the Spanish in the 1500s as a source of meat for sailors. After the passage of the Endangered Species Act, botanists re-surveyed the island and found some additional populations of endangered plants. Goats had probably already eradicated several never-known species. Altogether about 29,000 live goats were removed from the island to the mainland,

and fared poorly, and 15,000 were shot, mostly in inaccessible canyons by helicopter. The last were killed in 1991. Similar policies are in place regarding feral pigs in a number of national parks, whose digging upsets ecosystems, even when endangered species are not involved.

Does protecting endangered plant species justify causing animal suffering and death? Rollin's ethic based on animal sentience will say, "No", but a more broadly based, biologically based, environmental ethic will prefer plant species, especially species in their ecosystems, over sentient animals that are introduced misfits. We might say that, one on one, a goat does have more intrinsic value than a plant. So if the trade off were merely a thousand goats for a hundred plants, oblivious to instrumental, ecosystem, and species considerations, the goats would override the plants.

But the picture is more complex. Out of place from their original ecosystems, goats are "devastating" (to spin Rollin's words another way) the ecosystems in which they presently exist, producing extinctions of plant species that are otherwise well adapted to those ecosystems. I agree with the prevailing ethic here that finds that the well-being of such plant species outweighs the welfare of the goats. By my account Rollin's ethic is what is "repugnant" here. To say that the threshold of our moral sensitivity is just the same as the threshold of felt sensitivity is to say that moral concern is directed only toward inwardness; its scope does not include outwardness, except relationally. That is, in a sense, to make morality subjective, morality for and by subjects.

Rollin is a champion of animal welfare and justly to be praised, in principle and in practice, for his internationally distinguished career. Environmental ethics is a central concern on the world agenda, saving the biosphere, and those in search of an ethic deep enough, biologically and axiologically, to address this global concern will have to look elsewhere.

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