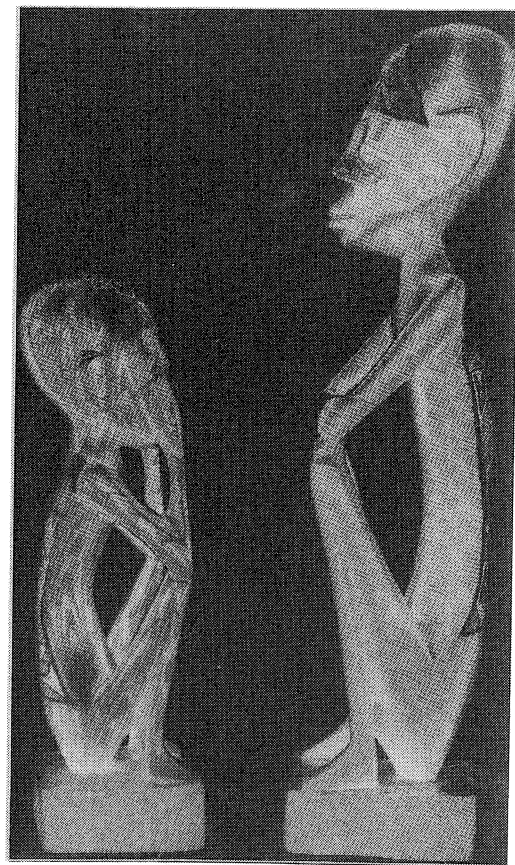
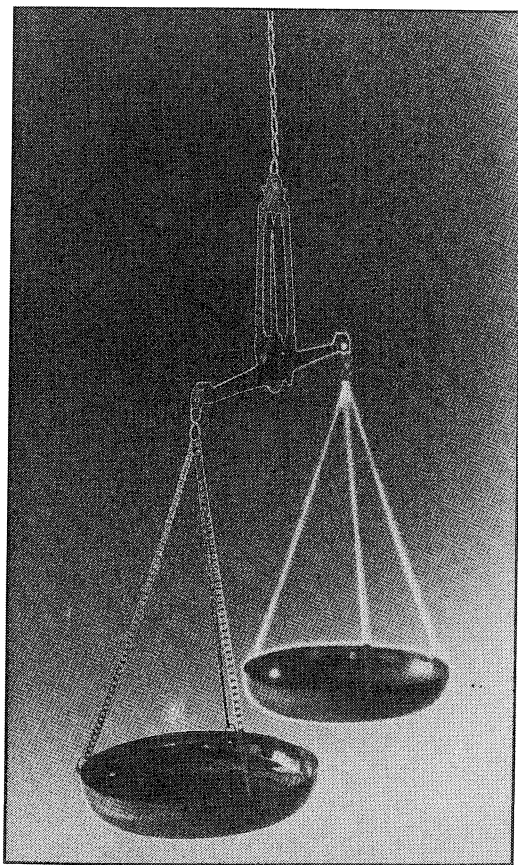


# HANDBOOK OF MORAL DEVELOPMENT



Edited by  
Melanie Killen • Judith Smetana

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CHAPTER

# 17

## NATURE AND MORAL DEVELOPMENT

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Whatever disagreements exist about morality, and there are many, people understand that morality deals with people's relationships with other people. Yet is it also possible that people have moral relationships with nature? With animals? Plants? Bodies of water? Landscapes? The earth? In this chapter, I discuss empirical and conceptual literature across diverse fields that answers yes to these question. Moreover, I believe this literature supports the proposition that nature plays an important and perhaps irreplaceable role in moral development and the moral life.

In providing this account, I build on a broad framing of the moral domain. Morality includes the traditional moral–developmental view, as circumscribed by Piaget (1932/1969) and Kohlberg (1984), that focuses on justice, rights, and obligations. Morality also includes a broader set of considerations focused on long-term character traits, virtue, human flourishing, and a teleology asking what it means to be fully human and to live meaningfully, and seeking moral endpoints for human lives. This broader view of morality dates back to Aristotle's delineation in *Nichomachean Ethics* of the ethical virtues (e.g., courage, temperance, friendship, wisdom, and justice), and has been drawn on by both modern moral philosophers (Foot, 1978; MacIntyre, 1984; Williams, 1985) and developmental psychologists (Campbell & Christopher, 1996; Lourenço, 2000).

The course of this chapter is as follows. The first section reviews literature on children's interactions with animals, the role of animals as moral facilitators in children's residential treatment centers, the development of environmental moral reasoning, and adolescents' moral environmental activism. Section 2 focuses on the field of conservation behavior. Section 3 brings together diverse literatures that suggest that connection to nature enhances people's physical and psychological well-being. Section 4 extends this last idea and suggests that humans, in ancestral times, came of age not only with nature, but with wild nature, and that this connection to wildness remains an essential human need. Section 5

seeks an answer to the question, if humans need connection with nature, let alone wild nature, then why are humans destroying nature so readily? Finally, Section 6 suggests that moral relationships with nature do not develop independently of human-human moral relationships, but dialectically inform one another in ontogenesis.

### THE DEVELOPMENT OF CHILDREN'S MORAL RELATIONSHIPS WITH NATURE

If it is difficult for the reader to think of nature as having moral standing, or of a child being in a moral relationship with a nonhuman moral other, think of animals. Think of a dog. Kick one, and by most accounts it feels pain. Kick a boulder, and by most accounts only your foot hurts. It would appear, then, that the dog's sentience—its capability to feel pain—establishes some form of human obligation such that, for example, one cannot with moral impunity bash open the skulls of domestic animals for personal enjoyment. Indeed, such sentience grounds various philosophical theories of animal rights. For example, Regan (1986) argues that “[p]ain is pain wheresoever it occurs. If your neighbor's causing you pain is wrong because of the pain that is caused, we cannot rationally ignore or dismiss the moral relevance of the pain your dog feels” (p. 33).

Yet how is it that children even come to care about the sentience of animals? In a year-long study in a preschool setting, Myers (1998) focused on 3- to 6-year-old-children's relationships with a wide variety animals, including a dog, turtles, a guinea pig, goldfish, doves, ferrets, pythons, a spider monkey, bugs, and squirrels. Based on his observations, field notes, interviews, and videotaped sessions, Myers proposes that young children begin to understand that animals display four properties that remain constant across many different interactions: *agency* (a dog decides to eat and acts accordingly), *affectivity* (a dog appears to enjoy playing with the child), *coherence* (a dog is able to coordinate its movements in response to the child's actions), and *continuity* (the dog's repeated interactions become regularized into a relationship with the child). Such understandings make it possible for children to recognize that animals have their own subjective states and can have interests in interacting with the child (“my dog wants to play with me”). In Myers' (1998) view, “animals appear to be optimally discrepant social others by the time of early childhood, offering just the right amount of similarity to and difference from the human pattern and other animal patterns to engage the child. Crucially, animals are social others . . . because they display the hallmarks of being truly subjective others” (p. 10).

Because children come to understand an animal as a social other, animals can become a source of companionship and support. For example, Covert, Whirren, Keith, and Nelson (1985) found that 75% of the children in their study between ages 10 and 14 said that they turned to their pets when they were upset. More generally, Melson (2001) writes in her account of animals in the lives of children that one “of the most important yet unrecognized functions of pets—from dogs to goldfish—for children may be their *thereness*. . . . This constant availability may be a major reason why many children bestow the honorific ‘my best friend’ on their pets. . . . Their animate, responsive proximity makes children feel less alone in a way that toys and games, television or video, even interactive media, cannot” (p. 59).

Children's understanding an animal as a social other also appears to lead at least some children to accord moral standing to animals. One 4-year-old girl in Myers (1998) study, for example, said that it is wrong to squish a spider “because it has to have its freedom” (p. 147). Myers also found that preschool children frequently expressed moral sensitivity to harms to animals. For example, in one field note entry, Myers recorded the language two children used in attributing animal emotion and desire as the reason for why a turtle put its head

back in its shell after a child touched its tail: "Maybe . . . Cause he's scared. . . [Another child then says]: Maybe he doesn't want us to do that" (p. 90).

In other literature, Kahn and Friedman (1995) interviewed 72 economically impoverished African-American urban children in first, third, and fifth grades about their environmental views and values. Results showed that 84% of the children said that animals were an important part of their lives. In their reasons, 11% of these children's justifications emphasized biocentric considerations, including that animals have intrinsic values or rights. For example, one fifth-grade child said that it is wrong to throw garbage in a local waterway because "Fishes, they want to live freely, just like we live freely. . . . They have to live in freedom, because they don't like living in an environment where there is so much pollution that they die every day" (p. 1412). Thus not only does this child accord fish desires ("they want to live freely") but embeds such desires within a judgment for humans to respect such desires (not to pollute the waterway) because it would cause harm to the fish ("there is so much pollution that they die every day").

Moral dimensions of children's relationships with animals have emerged as well in the therapeutic literature. For example, Katcher and Wilkins (1993, 1998, 2000) have engaged in over a decade of work with children diagnosed with autism, developmental disorder, attention-deficit hyperactivity disorder, conduct disorder, and oppositional-defiant disorder, structuring interventions around children's interactions with animals. Katcher and Wilkins found that such children persisted in learning the skills and information necessary for them to handle the animals. Moreover, through such interactions with animals, these children also demonstrated an increase in attention span, a decrease in hostile and aggressive behavior, and an increase in cooperative behavior. Indeed, the skill and care these children displayed in handling and caring for the animals led visitors frequently to ask, "Why are these children in residential treatment?" One part of an explanation may be that animals, in the words of Myers (1998), "pose less potential [than humans] for deceit, competition, manipulation, betrayal, and rejection" (p. 115). Katcher (2002), for example, reports that when children were bitten by small rodents (as they frequently were) they "explained the biting as defensive: 'He was frightened,' 'I held him too tightly,' 'I reached in the cage too quickly'" (p. 182). According to Katcher (2002), these children also "accepted the authority of the zoo instructors as legitimate and not imposed by force or institutional control" (p. 185).

Children's moral relationships with nature may begin with animals, but it does not end there. Rather, at a minimum, it appears that children sometimes bring moral obligatory reasoning to bear on their relationship with nonsentient nature as well. For example, in a series of studies, Kahn and his colleagues (Howe, Kahn, & Friedman, 1996; Kahn, 1997, 1999; Kahn & Friedman, 1995; Kahn & Lourenço, 2002) examined children's environmental moral reasoning by drawing on the social domain literature of Turiel (1983, 1998), Nucci (1981, 1996), Smetana (1983, 1995), and others where a moral obligation is assessed, in part, based on the criterion judgments of prescriptivity (the act under consideration is judged not all right to perform), rule contingency (the act is not all right to perform even if the law or a rule says it is all right), and generalizability (the act is not all right for people in another country to perform, even if people in that country perform the act). Based on these criterion judgments, and in consort with children's moral justifications, results showed across diverse populations that the majority of the children believed it was morally obligatory not to throw garbage in a local waterway. Oftentimes children's reasons focused on the harm such actions would bring to human beings or animals living in the water or depending upon the water source. But sometimes children also showed concern for the intrinsic value of nonsentient nature itself. For example, one

fifth-grade African-American child from the inner city of Houston Texas said that it is not all right to throw trash in their local bayou, "Because water is what nature made; nature didn't make water to be purple and stuff like that, just one color. When you're dealing with what nature made, you need not destroy it" (Kahn, 1999, p. 162). Similarly, a fifth-grade Brazilian child living in a remote village near the headwaters of the Amazon River said that it is not all right to throw trash in their river (the Rio Negro), "Because the river was not made to have trash thrown in it, because the river belongs to nature" (p. 162). In both cases, a child offers a moral conception (in terms of a teleology) of the proper endpoint of nature, and that the good arises with nature reaching that end and being complete.

This literature—although only emerging in recent years—suggests that children develop moral relationships with (and engage in moral reasoning about) both sentient and nonsentient nature. It is also the case that nature provides a powerful content area by which to structure moral education. As a case in point, consider Thomashow's (2002) teaching of high school students in New Hampshire. Instead of lecturing to them about environmental issues, she found means to engage them in actual environmental decision making. Specifically, abutting a little-known 287-acre river park was a 2.3-acre parcel of land that the city was trying to decide how best to manage. Thomashow worked with the city government and citizen groups such that they agreed that a group of adolescent students would be given control for what happened to this piece of land. Following this agreement, the adolescents worked long hours garnering, sorting, and synthesizing relevant data (including much time spent on the land and surrounding areas). They developed alternative environmental managements plans, and agreed on one in particular: that people would be able to circumnavigate the 2.3-acre area but not go into the interior, so as to protect its fauna and flora. However, at a subsequent City Council meeting, the city's planning board said that they had received a grant to build a boardwalk into the interior of the 2.3 acre area. At the point, heated controversy ensued, because the adolescents believed the city was renegeing on their agreement. Toward the end of the meeting, the student spokesperson stood up and said:

This is not about the boardwalk. . . . This is about including us as citizens in this decision and keeping your promise. We didn't take this responsibility lightly. We have done our best to research and make the best possible decision for the good of the land and the people of Keene. You simply have to believe in us and honor your commitment. This is about whether you really think we are a part of this city, whether we deserve to make a decision that affects the place where we live. Your decision to involve us, or not, will determine our future commitment to this town and to public decision-making. (pp. 269–270)

This student's statement helped to sway the council, and to put into place a long-term program whereby students were asked to manage seven other pieces of public land. Thus, in this case, the protection of nature was embedded within a moral educational framework not unlike that of Kohlberg's just community (Kohlberg, 1980; Power, 1988). Adolescents were given real power to effect change and correlative duties to do so responsibly, worked cooperatively, sought to understand the views and values of other stakeholders, and sought to build community on a social and political level.

### CONSERVATION BEHAVIOR

In human–human relationships, acts often come under moral purview even if the magnitude of harm is small. For example, if I steal your BIC pen, most people would consider my act as wrong from a moral perspective. In contrast, in human–nature relationships, the magnitude



of harm itself often plays a critical role in establishing whether the act comes under moral purview. For example, if I pick up some fallen branches in the woods for firewood, most people would say "that's fine." Yet if the same act is conducted by thousands of people in the same location, the cumulative action can (and in many places does) lead to deforestation and the ecological collapse of the area. In this new context, most people would consider the same initial act (of a single individual picking up fallen branches for firewood) as wrong from a moral perspective. The point here is that we live in a world of increasing population and decreasing natural resources. Accordingly, conservation behavior has become a moral activity, and warrants our consideration.

The classic studies in the area of conservation behavior have focused on recycling behavior. For example, De Young (1989) investigated the views of thirty-two recyclers and fifty-nine nonrecyclers. He found that both groups were similar in their prorecycling attitudes, extrinsic motivation, and the degree to which they viewed recycling as important. However, the groups differed in terms of the degree to which they required additional information about recycling. Nonrecyclers said that they lacked information about how to recycle (e.g., how much space and time to allot to the activity, what can be recycled, how material must be prepared, and where to go for assistance). De Young proposed that, in shaping people's recycling behaviors, attitudes may often matter less than correct information. Other studies have focused on changing people's recycling behavior by controlling the reward structures (Diamond & Loewy, 1991) and the force of communication about the importance of the activity (Burn & Oskamp, 1986). Elsewhere in the literature, studies have focused on water and energy conservation. For example, Moore, Murphy, and Watson (1994) found over a 3-year period that water conservation was increased by the influence of media interventions and water costs. They also found that reported conserving behavior was better predicted by stated intentions than by knowledge. Along similar lines, Brandon and Lewis (1999) found that income and demographic features did not predict increased energy conservation, but that environmental attitudes (coupled with informational feedback) did.

Many factors have been examined that might underlay and predict conservation behavior. These factors include environmental concern (Dunlap, Vanliere, Mertig, & Jones, 2000), stated intentions (Moore et al., 1994), lifestyle choices (Leonard-Barton, 1981), informational techniques (De Young, 1989; Vining & Ebreo, 1990), positive motivational techniques (De Young & Kaplan, 1985/1986), environmental attitudes (Guagnano, Dietz, & Stern, 1995; Kaiser, Wölfing, & Fuhrer, 1999; Werner et al., 1995), values (Schultz & Zelezny, 1999; Schwarz, 1994; Vining & Ebreo, 1992), and intrinsic satisfactions (De Young, 1985/1986; Lee & De Young, 1994). However, perhaps the most overarching finding from this body of research is that all such factors are only weakly related to pro-environmental behaviors (Vining & Ebreo, 2002).

Given the comparatively large amount of research conducted in this area, why has it not led to more generalized and important results? One answer is that it has been poorly served by its emphasis on behavior, prediction, and simple causal linkages, as if there are direct external factors (such as economic costs, framed as contingencies of reinforcement) or internal factors (such as a value) that explain conservation behavior. But as social domain theorists have cogently argued (Killen, 1989, 1990; Smetana, Bridgeman, & Turiel, 1983; Turiel, 1983, 1998, 2002; Turiel & Davidson, 1986), social behaviors are often related to diverse forms of reasoning within a domain (vertical organization) and to the coordination of reasoning across domains (horizontal organization). For example, in his reanalysis of the Milgram experiment, Turiel (1983) showed that subjects' decision of whether or not to continue shocking an experimental confederate drew substantively on not only subjects'



moral considerations (e.g., of harm to others) but social conventional considerations (e.g., of expectations not to disrupt a scientific study sanctioned by a prestigious university). Thus, conservation behavior needs not so much to be linked to specific judgments but situated within the structural organizations of social knowledge.

Another answer is that the field of conservation behavior has not been grounded within a developmental framework. For example, in Vining and Ebreo's (2002) review of the literature on theoretical and methodological perspectives on conservation behavior, the words *child* or *children* do not appear even once. There are at least two reasons that this absence seems problematic. The first is that to effect change societally, we need to influence children and engage them substantively in the issues of import so that they are positioned to become responsible citizens if not leaders. This point seems obvious: Educate children. And conduct research with children to help support the educational process. The second reason addresses a critique that has been leveled at the field of conservation behavior, that it has offered little in the way of new or powerful theorizing (Vining & Ebreo, 2002). What I would suggest, following Piaget's (1971a, 1971b) account of genetic epistemology, is that psychological theories gain validity when foundational constructs are shaped by a dialectic between philosophical categories of knowledge and their psychological genesis. For example, in the moral domain it is not enough to say that an "is" does not lead to an "ought" (the naturalistic fallacy), and then engage in merely speculative philosophical theorizing about what morality requires. Rather, it is increasingly recognized that an "ought" also implies a "can"—that a valid moral philosophical theory needs to build on an accurate account of moral development and moral capabilities (Scheffler, 1986, 1992; Williams, 1985). What this means for the field of conservation behavior is that it needs to pay greater attention to its foundational constructs (e.g., is "behavior" even the best way to frame the issues of interest?) and developmental origins.

### CONNECTION TO NATURE FOR PHYSICAL AND PSYCHOLOGICAL WELL-BEING

Virtually all moral theories take seriously human physical and psychological well-being. Consequentialist theories, for example, do so perhaps most directly by framing a theory in terms of what produces the best state of human affairs overall (as judged from an impersonal standpoint giving equal weight to the interest of everyone), where "best" is usually closely aligned with what is physically and psychologically best for humans (Scheffler, 1988; Smart & Williams, 1973). Similarly, deontological theories to a large degree are concerned about justice and rights because such matters impact people's physical and psychological well-being (Beehler, 1978). In other words, an account of what promotes human physical and psychological well-being is necessary for moral theory, and for that matter for most anyone who seeks to help others and society at large.

The proposition I would like to advance, then, is that connection to nature fosters physical and psychological well-being; and this connection is too often overlooked in psychological accounts of human development. As a starting point to support this proposition, consider a study conducted by Ulrich (1984), who examined the potential differences in the recovery of patients after gallbladder surgery depending on whether the patients were assigned to a room with a view of a natural setting (a small stand of deciduous trees) or a view of a brown brick wall. Patients were paired on relevant variables that might effect recovery (e.g., age, sex, weight, tobacco use, and previous hospitalization). The results showed that "patients with the natural window view had shorter postoperative hospital stays, and far fewer negative comments in nurses' notes ('patient is upset,' 'needs much encouragement') and tended to have lower scores for minor postsurgical complications

such as persistent headache or nausea requiring medication. Moreover, the wall-view patients required many more injections of potent painkillers, whereas the tree-view patients more frequently received weak oral analgesics such as acetaminophen" (Ulrich, 1993, p. 107).

Other studies have supported the restorative effects of nature, whether it is viewed directly or as a visual representation. For example, Moore (1982, cited in Ulrich, 1993) found that prison inmates whose cells looked out onto nearby farmlands and forests needed less health care services than inmates whose cells looked out onto the prison yard. In a dental clinic, Heerwagen (1990) presented patients with either a large mural depicting a spatially open natural landscape or no mural at all. Patient data included heart rate measurements and affective self-ratings. Results suggest that patients felt less stressed on days when the mural was present. In another study, Ulrich and colleagues (1991) exposed 120 participants to a stressful movie, and then to videotapes of various natural and urban settings. They collected data on stress recovery through subjects' self-ratings of affective states, as well as heart rate, muscle tension, skin conductance, and pulse transit time. Taken together, their results showed that stress "recovery was faster and more complete when subjects were exposed to natural rather than urban environments" (p. 201).

Although nature has been shown to be restorative, nature is not a homogenous construct, and certain forms of nature have been shown to be more restorative than others. For example, Ulrich and Lunden (1990) randomly assigned 166 patients undergoing open-heart surgery with visual stimulation of two different types of nature pictures (either an open view with water or a moderately enclosed forest scene), an abstract picture, or a control condition consisting of either a white panel or no picture at all. Their results showed that the patients exposed during surgery to the picture of an open nature view with water experienced much less postoperative anxiety than the control groups and the groups exposed to the other types of pictures.

Kaplan and Kaplan have approached this topic from a different direction with similar results. Namely, they have conducted extensive research on individuals' preferences for different sorts of landscapes (Kaplan & Kaplan, 1989; see also, e.g., R. Kaplan, 1973, 1977, 1985; and S. Kaplan, 1983, 1987, 1992). They found, for example, that low-action waterscapes were "a highly prized element in the landscape" (p. 9). So were landscapes that were open, yet defined, with "relatively smooth ground texture and trees that help define the depth of the scene" (p. 48). According to Kaplan and Kaplan, such landscapes "can be called parklike or woodlawn or savanna" (p. 48). In contrast, they found that people consistently reported low preferences for settings that were blocked, such as a dense tangle of understory vegetation dominating the foreground of a scene. Such findings did not appear to be directly attributable to a wide variety of competing explanations, such as knowledge about an environment, urban versus rural upbringing, or race.

Why do people's preferences for nature fall out in this pattern? Early research by Wohlhill (1968) provided tentative evidence that middle levels of complexity—the richness or number of different objects in the scene—largely explained environmental preferences. Kaplan and Kaplan found partial support for this hypothesis insofar as people did not prefer scenes that lacked complexity. Yet high degrees of complexity did not by itself increase preference. Thus, it "is now quite clear that there is more to experimental aesthetics than optimal complexity" (S. Kaplan, 1992, p. 595). Kaplan and Kaplan (1989) found, for example, that in judging landscapes people appear "to be heavily influenced by the potential for functioning in the setting. Thus indications of the possibility of entering the setting, of acquiring information, and of maintaining one's orientation emerge as consistently vital attributes" (p. 38). In particular, two important landscape characteristics

emerged in their research. One characteristic they call *legibility*—that one could find one's way back if one ventured further into the scene depicted. Such scenes offer visual access, but with distinct and varied objects to provide notable landmarks. A second characteristic they call *mystery*—that one could acquire more information by venturing deeper into the scene and changing one's vantage point. Such scenes include winding paths, meandering streams, and brightly lit areas partially obscured by some foliage.

As with healthy landscapes, human contact with animals can also promote physiological health and psychological well-being. Consider, for example, the common aquariums that—at least in years past—inhabit waiting rooms in many dental offices. Does the conspicuous placement of these aquariums reflect but an arbitrary cultural convention? In a simple experiment, Katcher, Friedmann, Beck, and Lynch (1983) found that watching an aquarium resulted in significant decreases in blood pressure below the resting level in both hypertensive and normal subjects. In a more detailed experiment, Katcher, Segal, and Beck (1984) examined the influence of aquarium contemplation on patients about to undergo oral surgery. After the surgery, the oral surgeon (who was unaware of the nature of the pretreatment) made assessments of the patients' comfort level during surgery, as did an observer, and the patient. Results showed that aquarium contemplation was as effective as hypnosis in relaxing patients and in increasing their comfort level during surgery. In another study (Beck & Katcher, 1996, chap. 1) researchers examined the influence of pets on the course of heart disease. Tracking ninety-two patients, and accounting for social variables known to be associated with mortality from heart disease, it was found that the mortality rate among people with pets was about one-third of patients without pets. Contact with animals also positively affects people who have organic or functional mental disorders (see Katcher & Wilkins, 1993, for a review). For example, hundreds of clinical reports show that when animals enter the lives of aged patients with chronic brain syndrome (which follows from either Alzheimer's disease or arteriosclerosis) that the patients smile and laugh more, and become less hostile to their caretakers and more socially communicative. A number of studies also show that through interactions with animals (such as a dog, cat, bird, dolphin, or even small turtle) autistic children have more focused attention, social interaction, positive emotion, and speech.

In Kaplan and Kaplan's (1989) reading of hundreds of studies, they conclude that the "immediate outcomes of contacts with nearby nature include enjoyment, relaxation, and lowered stress levels. In addition, the research results indicate that physical well-being is affected by such contacts. People with access to nearby-natural settings have been found to be healthier than other individuals. The longer-term, indirect impacts also include increased levels of satisfaction with one's home, one's job, and with life in general" (p. 173). "Viewed as an amenity," Kaplan and Kaplan (1989) write, "nature may be readily replaced by some greater technological achievement. Viewed as an essential bond between humans and other living things, the natural environment has no substitutes" (p. 203).

### WILDNESS AND HUMAN FLOURISHING

Some scholars have not only focused on the physical and psychological benefits of connection to nature, but emphasized that humans came of age in the company of wildness—wild animals, wild landscapes—and that this connection to wildness still comprises a fundamental human need.

Shepard (1978, 1995, 1996, 1998) has been one of the strongest proponents of this view. For example, Shepard (1998) writes that the transformation of societies from hunter-gatherer to agrarian took place over the past twelve thousand years, which is insignificant "in terms of human history that began with the appearance of *Homo sapiens* some four

hundred thousand years ago, our genus, *Homo*, at two million years, and our family, *Hominidae*, six million years ago” (p. 81). Wild animals, Shepard (1996) says, were among the first objects of classificatory thinking, and that “the human species emerged enacting, dreaming, and thinking [wild] animals and cannot be fully itself without them” (p. 4). Although Shepard acknowledges the research discussed previously that shows the physical and psychological benefits of interacting with companion animals (such as dogs and cats), it is a grudging acceptance. For in Shepard’s (1996) view, domestic animals are “biological slaves who cringe and fawn or perform” as we wish, and “are not a glorious bonus on life; rather they are compensations for something desperately missing,” “vestiges and fragments from a time of deep human respect for animals, whose abundance dazzled us in their many renditions of life” (p. 151).

Turner (1996), like Shepard, offers passion and on occasion biting words for the loss of wildness and our acceptance of poor substitutes:

We visit the zoo or Sea World to see wild animals, but they have been tamed, rendered dependent, obedient. We learn nothing of their essential life in nature. We do not see them hunt or gather food. We do not see them mate. We do not see them interact with other species. We do not see them interact with their habitat. Their numbers and their movements are determined by human artifice. We see them controlled. We see them trained. In most cases they are as docile, apathetic, and bored as the people watching them. If we visit wild animals in sanctuaries, we are protected by buses and Land Rovers and observation towers. We are separated from any direct experience of the wild animals we came to visit. (p. 29)

Turner (1996) also emphasizes wild lands, and defines a place as *wild* “when its order is created according to its own principles of organization—when it is self-willed land. Native people usually (though definitely not always) ‘fit’ that order, influencing it but not controlling it” (p. 112). Moreover, Turner argues that such wild places have “autonomy,” which does not involve a radical separation from others, but “interconnectedness, elaborate iteration, and feedback” (p. 113), which create the possibility of change and thereby freedom. Thus for Turner—not unlike for Piaget (1932/1969) and Kohlberg (1984)—autonomy does not involve an “anything goes” mentality, but self-organization and self-regulation. Autonomy is impeded when adults are coercive—in Turner’s case, when adults control land and animals; in Piaget’s and Kohlberg’s case, when adults coerce children. As Turner says, the “important point is that whatever kind of autonomy is in question—human freedom, self-willed land, self-ordering systems . . . all are incompatible with external control” (p. 113). For this reason, Turner argues against most of the activities carried out by environmental organizations, be they by wildlife managers or conservation biologists. Rather, he says:

We need big wilderness, big natural habitat, not more technological information about big wilderness. Why not work to set aside vast areas where we limit all forms of human influence: no conservation strategies, no designer wilderness, no roads, no trails, no satellite surveillance, no over-flights with helicopters, no radio collars, no measuring devices, no photographs, no GPS data . . . no typographical maps. Let whatever habitat we can preserve go back to its own self-order as much as possible. Let wilderness again become a blank on our maps. (p. 120)

Against this backdrop of “self-willed land” it becomes clearer how fear of the natural plays an important role in the human experience of the wild. Fear may help us to recognize that we are not completely in control, but part of interconnected systems. “To come upon a grizzly track,” Turner (1996) writes, “is to experience the wild in a most intimate, carnal way, an experience that is marked by gross alterations in attention, perception, body

language, body chemistry, and emotion. Which is to say you feel yourself as part of the biological order known as the food chain, perhaps even as part of a meal" (p. 85). Fear, of course, is only one aspect of the human experience of wildness, but it is worth emphasizing because of the seeming paradox that although people seek to minimize fearful interactions in their lives so as to prosper, in so doing they may impede their own well-being. One partial explanation of this paradox may be that fear of the natural is experienced differently than fear of humans or of the human-built environment.

Physiological data bear on this proposition. In a series of studies, Öhman and his colleagues (Öhman, 1979; Öhman, Dimberg, & Öst, 1985; Öhman, Erixon, & Löfberg, 1975) created a version of a Pavlovian conditioning experiment wherein they first conditioned aversive responses by showing subjects either fear-relevant natural stimuli (such as snakes and spiders) or neutral stimuli (such as geometric figures) and paired each slide presentation with a mild electric shock. The researchers then presented the same slides ten to forty additional times without the electric shock. Based on measures of subjects' skin conductance and heart rate, they thereby assessed the extinction rate of the fear response acquired earlier. Results showed that natural fear-related stimuli were much more resistant to extinction (forgetting) than the neutral stimuli. Similar findings appeared when contrasting snakes and spiders to dangerous human artifacts such as handguns and frayed electrical wires (Cook, Hodes, & Lang, 1986; Hugdahl & Karker, 1981). Similar findings also appeared when subjects were presented with subliminal stimuli. For example, Öhman (1986; Öhman & Soares, 1993) modified the conditioning experiments such that after the learning phase (with the electric shock), subjects were presented with the same slides for 15 to 30 milliseconds (such that the slides could not be consciously recognized) and then immediately "masked" by a slide of another stimulus. Results showed that the natural fear-related stimuli (snakes and spiders), but not the other stimuli, could elicit strong aversive physiological responses (see Ulrich [1993] for a review of this body of research).

The proposition that (a) humans distinguish between fear of the natural and human, and (b) that experiencing fear of the natural, within limits, forms part of healthy psychological functioning helped to structure a study by Kahn, Saunders, and Myers (2001) conducted at Brookfield Zoo (outside of Chicago, Illinois) on children's conceptions of bats. One of the exhibits at the zoo is the "Australia House," a darkened, cave-like enclosure, about 80 feet long, that people enter and walk through. The exhibit houses Rodrigues fruit bats. One of the most notable features of this exhibit is that there is no barrier between the exhibit animals and the public. Thus, as people walk through the exhibit, they not only look at and hear the bats, but experience their immediate proximity. Indeed, as the bats fly around the mostly darkened enclosure, they at times swoop within inches of the people in the exhibit. In this context, Kahn and colleagues conducted semistructured interviews with 120 children across four age groups (6 to 7, 9 to 10, 12 to 13, and 15 to 16 years old) after the children finished the exhibit. In one set of findings, results showed that the majority of children felt a sort of fear with bats. For example, children said directly that they were afraid of bats, or believed that the bats could hurt them, or would prefer not to sleep in a place where bats could fly around freely. At the same time, children often seemed to appreciate such fear in their lives. For example, they preferred that the Australia House remain as it is (and for the zoo not to construct a wire mesh barrier between the bats and humans), or said they felt more alert in the Australia House, or rejected the analogy that their feeling around bats is anything like the feeling they get when walking down a dark city street at night. Although, from Turner's perspective, the zoo environment offers an impoverished connection to wildness, it does offer some connection, and to that extent a venue for research on this topic.

## ENVIRONMENTAL GENERATIONAL AMNESIA

If the human experience of wildness—that involves living in the presence of other self-regulating systems—is still a central human need for human flourishing, it is not a need that is well recognized by modern people. Why not? One explanation is that we, as children, have come of age in an existing environment that is already degraded, and we use these conditions as the baseline to construct our knowledge of what constitutes a normal and reasonably healthy environment. The crux here is with each ensuing generation, the amount of environmental degradation increases; but each generation in its youth takes that degraded condition as the nondegraded condition, as the normal experience. Kahn (1997, 1999, 2002) has called this psychological phenomenon environmental generational amnesia.

Developmental precursors to environmental generation amnesia emerged in Kahn and Friedman's (1995) research on the environmental views and values of economically poor African-American children living in Houston, Texas. Houston is one of the more environmentally polluted cities in the United States. Local oil refineries contribute not only to the city's air pollution, but also to distinct oil smells during many of the days. Local rivers can be thought of as sewage transportation channels more than fresh waterways. Garbage is commonly found alongside the local rivers. In this context, while interviewing seventy-two children in first, third, and fifth grades, Kahn and Friedman found that although the children understood in general about the idea of air pollution, water pollution, and garbage, statistically fewer children believed that Houston had any of these problems itself. Such findings support the proposition that children are constructing an environmental baseline of normality in the context of an unhealthy environment.

On many occasions while lecturing in public, Pyle (2002) asks his audience whether they can remember a particular place in nature from their childhood, a place "they went repeatedly to play, explore, sulk, or think; a small, particular corner of the landscape where they went to make forts, catch creatures, and mess about with water and plants" (p. 306). Most people can. Then he asks his audience how many of them could return to their special places and find them substantially intact. Very few can. Most find such a realization distressing. According to Pyle, humans need not only the large wild places, but local untrammelled areas, even a vacant lot, by which to connect to nature. Such areas, according to Pyle, protect us from what he calls the extinction of experience whereby lack of interaction with rich ecosystems leads to lack of concern for their protection, which leads to further lacks of interactions. Thus the extinction of experience is a cycle whereby environmental impoverishment begets greater environmental impoverishment.

Fredston (2001) also points to the problem of environmental generational amnesia from her decades of experience rowing more than twenty thousand miles of some of the wildest coast lines in the arctic waters. On one of her trips to Norway, she mentions that much of Norway's built environment has an aesthetic that most towns in Alaska (where she lives) lack. But she adds:

Still, even the undeniably beautiful portions of the Norwegian coast that send visitors from more developed, congested parts of Europe into raptures seemed sterile to us. . . . That experience frightened us to the marrow. It made us realize that, like the perpetually grazing sheep [in Norway], centuries of human habitation have nibbled away not only at the earth but at our perception of what constitutes nature. When we do not miss what is absent because we have never known it to be there, we will have lost our baseline for recognizing what is truly wild. In its domestication, nature will have become just another human fabrication. (p. 217)

Fredston then recognizes that the “‘Norwegianification’ of Alaska is occurring, one project at a time, with each road, each bridge, each new house built where none has been before” (p. 219).

The problem of environmental generational amnesia offers an important area for future systematic research. One line of investigation could continue to focus on what children know about environmental problems, and to distinguish experiential knowledge from what DeVries (1997) calls “school varnish”—such as rote memorization of environmental problems. A second line of investigation could focus on historical events and records. For example, Hand (1997) documents that while many centuries ago the forests in the Highlands of Scotland were as “grand as any on earth” (p. 12), today they are one of the most deforested lands in the world. Yet, according to Hand, the Scots of today have virtually no conception of a forest, of its ecological vastness or beauty. Hand presents these ideas in an essay titled “The Forest of Forgetting.” It is a forgetting that crosses generations. A third line of investigation could focus cross-culturally. If, as proposed, environmental generational amnesia is tied to a constructivist account of knowledge formation, then it should appear universally.

### THE MORAL DIALECTIC CROSS-SPECIES

A subfield within developmental psychology—sometimes referred to as *naïve biology* (Inagaki & Hatano, 2002) or *folkbiology* (Coley, 1995; Medin & Atran, 1999)—focuses on children’s conceptions of the biological world (Carey, 1985; Gelman, 2003; Gelman, Spelke, & Meck, 1983). One of the findings is that young children engage in a good deal of *personification*, which refers to “their attempts to predict and explain behaviors and properties of animals and plants by using their relatively rich knowledge about humans” (Inagaki & Hatano, 2002, p. 1). For example, a 5 year-old boy in a study by Inagaki and Hatano (2002) said: “We can’t keep it (a rabbit) forever the same size. Because, like me, if I were a rabbit, I would be 5 years old and become bigger and bigger” (p. 51). Here the child applies his knowledge about human growth to an animal.

However, one could imagine a developmental account that is less unidirectional, as well as applying in the moral domain. Imagine, for example, a 4-year-old boy, John, whose home environment includes a gentle Chesapeake Bay Retriever and a 7-year-old brother. As part of exploring the world around him, imagine that one day John pulls on the ears and nose of his Retriever. Kids do these sort of things. In response, the dog gently nips John and then moves away. John then tries pulling on the ears and nose of his older brother, and the brother responds largely in kind, swatting John’s hand and moving away. We can use this event, a single snapshot in time, as a place holder for the kind of events by which John constructs similarity relationships between two sentient creatures: dog and human. Next imagine that John tries sitting on the back of his dog, and again the dog gently nips and moves away; but when he tries the same activity with his older brother, he finds he gets a piggyback ride—sometimes. This event is a placeholder for John’s construction of differences between dog and human, again as just a snapshot in time. The proposition is that such explorations and interactions happen daily, and on a microgenetic level lead humans to a bidirectional cross-species construction of knowledge. As Shepard (1996) suggests: “Of each species we can say, ‘I am not that—and yet, just in this one respect, it is like a part of me,’ and so on, as though with every ‘I am not that one’ we keep some bit of them. We take in the animal, disgorge part of it, discover who we are and are not” (p. 72). And, it could be added, we discover what the nonhuman world is, and is not.



Evidence for the construction of moral similarities and differences across species emerged in Kahn's (1999) research on environmental moral reasoning, and particularly his characterization of two forms of biocentric reasoning. One form occurred through establishing isomorphic relationships. Here children compared natural entities (usually animals) directly with humans. For example, one child said: "Fishes, they want to live freely, just like we live freely. . . . They have to live in freedom, because they don't like living in an environment where there is much pollution that they die every day" (Kahn, 1999, p. 101). Thus an animal's desire ("to live freely") is viewed to be equivalent to that of a human's desire, and because of this direct equivalency children reasoned that animals merit the same moral consideration as do humans. Such isomorphic reasoning should not be confused with *personification*, where an animal or plant is likened to a human or human quality; rather here a moral feature (such as freedom) is deemed important to both nature and humans, and on that basis a moral principle (such as to protect freedom) is applied equally to both nature and humans ("Fishes, they want to live freely, just like we live freely").

A second form of biocentric reasoning occurred through establishing transmorphic relationships. For example, a fifth-grade child said:

Fish need the same respect as we need. . . . Fishes don't have the same things we have. But they do the same things. They don't have noses, but they have scales to breathe, and they have mouths like we have mouths. And they have eyes like we have eyes. And they have the same co-ordinates we have. . . . A co-ordinate is something like, if you have something different, then I'm going to have something, but it's going to be the same. Just going to be different. (Kahn, 1999, p. 101, 104)

This child appears to draw on a word, *co-ordinate*, he encountered in some other context to help him explain that although fish are in some respects not the same as people (they do not have noses like people do) that in important functions (such as breathing and seeing) they are the same. Thus, he moves beyond a reciprocity based on directly perceivable and salient characteristics to be able to establish moral equivalences based on functional properties. Said differently, through transmorphic reasoning the child is able now to coordinate similarities with differences cross species: a developmental achievement.

The cross-species dialectic can and often does play out not only by affirming the moral but the immoral. The literature shows, for example, close linkages between child abuse, domestic violence, and animal abuse (Ascione & Arkow, 1999). In one study, for example, Quinlisk (1999) found that of the homes that had reported domestic violence, 72% also indicated that there was animal abuse. Some of the written qualitative comments included "He killed the ferret just to scare us" (p. 170). Or "Because I was late getting home he put my cat in the microwave. The cat died later that night" (p. 170). Ascione and Arkow (1999) suggest that violence "directed against animals is often a coercion device and an early indicator of violence that may escalate in range and severity against other victims" (p. xvii). Other literature suggests that particularly aggressive acts against animals are an early indicator in children of future psychopathology (Arkow, 1999; Kellert & Felthous 1985), and that exposure to animal abuse can desensitize children to violence between humans (Ascione, 1993).

These cases highlight the (im)moral dialectic on the level of the individual. The dialectic also occurs societally when certain groups of people are likened to animals and equally mistreated. Most notably, Spiegel (1988) documents in the United States similarities between the treatment of African Americans and animals. Both have been enslaved, branded, hunted, transported, sterilized, and used without consent in painful and sometimes deadly

medical experiments. The justifications often coincide, as well. Consider some of Spiegel's (1988) juxtapositions from others' published writings:

- 1a. "(The horse) is by Nature a very lazy animal."
- 1b. "The Negro if left to himself will not work, he will lie down and bask in the sun." (p. 41)
- 2a. "They said that the cries they [the dogs] emitted when struck, were only the noise of a little string that had been touched, but that the whole body was without feeling."
- 2b. "Negroes . . . are void of sensibility to a surprising degree." (p. 61)
- 3a. "A trained dog is a joy and pride."
- 3b. "A state of bondage, so far from doing violence to the law of nature, develops and perfects it; and that, in that state (the Negro) enjoys the greatest amount of happiness, and arrives at the greatest degree of perfection, of which his nature is capable." (p. 39)
- 4a. "Unless one is initially prepared to adopt a rather rampant anthropomorphism in respect to animals, they can have no rights."
- 4b. "Negroes have no rights which the white man is bound to respect." (pp. 88–89)

Some of these statements were made by distinguished people. For example, it was Justice Taney, a member of the United States Supreme Court who heard the Dred Scott case, who said that "Negroes have no rights which the white man is bound to respect."

Future research on the cross-species moral dialectic seems wide open. As shown, it could focus on early ontogeny, and basic developmental mechanisms by which children construct concepts of similarities and differences between humans and nature. It could focus on how such constructions are then implicated in moral judgments. And it could focus on mistreatments of animals and humans, in interpersonal settings (such as the family context) and as codified by a society. Throughout such investigations I would expect not only direct correspondences (e.g., an abusive father might beat his son and his dog) but complicated interplays that might be hard to predict at the onset of any investigation, particularly at the societal level.

To illustrate this point, consider Sax's (2000) booklength exposition of animals in the Third Reich. As is well known, "Nazis herded human beings, branded them with numbers, neutered them, and slaughtered them industrially, as people had traditionally done with animals" (p. 22). The Nazis also operated, according to Sax, on a fundamental paradigm based on predator and prey. Nazi ideology extolled animals like the wolf and eagle, and espoused not so much maliciousness as indifference to those it would kill. Indeed, the Nazis passed strict laws protecting animals from abuse, and proscribing in minute detail how they must be provided for, transported, bred, and slaughtered. As Himmler said, speaking to leaders of the SS in October 1943:

Whether nations live in prosperity or starve to death interests me only in so far as we need them as slaves for our culture. . . . We shall never be rough or heartless when it is not necessary; that is clear. We Germans, who are the only people in the world who have a decent attitude toward animals, will also assume a decent attitude toward these human animals. But it is a crime against our own blood to worry about them. . . . (Fest, 1970, quoted in Sax, 2000, p. 115)

According to Sax, an "unarticulated purpose of the Nazi animal protection laws was to accustom people to think of euthanasia as a positive thing. By desensitizing people, the killing of animals helped open the way for the mass murder of human beings" (p. 169).

Of course, Nazis could treat animals brutally, as well. For example, “. . . some members of the SS were required to rear a German shepherd for twelve weeks, then strangle the dog under the supervision of an officer” (p. 169). But, again, such brutality often seemed to serve the larger goal of desensitizing Germans to the suffering of non-Aryan sentient life.

## CONCLUSION

A good deal of research and scholarship lies at the intersection of nature and moral development. This work draws from various literatures, including developmental psychology, environmental psychology, psychophysiology, sociobiology, conservation behavior, conservation psychology, ecopsychology, human ecology, and environmental education. Taken together, the literature points in a reasonably clear direction.

As *Homo sapiens*, we came of age in close contact with a rich and varied natural environment, and to a large degree unrecognized by modern people we still depend on nature for our physical and psychological well-being. As Dubos (1968) writes: “It is questionable that man can retain his physical and mental health if he loses contact with the natural forces that have shaped his biological and mental nature” (quoted in Shepard, 1998, p. 147). Along similar lines, Kalpan and Kalpan (1989) write that as “psychologists we have heard but little about gardens, about foliage, about forest and farmland. . . . Perhaps this resource for enhancing health, happiness, and wholeness has been neglected long enough” (p. 198). Moreover, the importance of nature extends even further. As other literature suggest, through interactions with animals, children develop empathy and construct concepts of reciprocity and otherness that are hallmarks of human morality. Children at times reason about their relationships with nature from a moral perspective. This perspective has features that are morally obligatory (based on criterion judgments of prescriptivity, rule contingency, and generalizability) and can be based on both anthropocentric moral considerations (such as human welfare) and biocentric moral considerations (such as that nature has intrinsic value, rights, or a teleology that needs to be respected). Children’s connection to wild aspects of nature, be they large tracts of undeveloped “self-willed” land or even fearful encounters with animals, allows for the development of moral understandings about autonomy, self-organization, and freedom. Finally, the literature suggests that children’s moral development through interaction with nature furthers human–human morality; and vice versa, both on a microgenetic and macrogenetic level in ontogenesis.

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