

NEITHER ENEMY NOR FRIEND: NATURE AS CREATION IN THE THEOLOGY OF SAINT THOMAS AQUINAS

by *Stephen J. Pope*

Abstract. This paper traces three paradigmatic responses to the presence of evil in nature. Thomas Henry Huxley depicts nature as the enemy of humanity that morality combats “at every step.” Henry Drummond views nature as benevolent, a friend of humanity, and the ultimate basis for morality. The paper argues that a third view, that of Thomas Aquinas, regards nature as creation, capable of being neither enemy nor friend of humanity but rather the context within which relations of enmity or friendship develop between human beings and God.

Keywords: Thomas Aquinas; creation; Henry Drummond; enemy; evil; friend; T. H. Huxley.

Since the publication of Charles Darwin’s *The Origin of Species* in 1859, philosophers and theologians have struggled over the implications of the theory of evolution for Christian faith and morals. Darwin’s analysis of the “Struggle for Life,” the elimination of “unfit” organisms and species, and the relentless march of natural selection served as a strong impetus for reflection on the status of evil in nature and its implications for religion and morals. This paper will briefly examine three paradigmatic responses to evil in nature—those of Thomas Huxley, Henry Drummond, and Thomas Aquinas—and will argue for the superiority of the last.

NATURE AS ENEMY

One response regards nature as the primary source of human pain and suffering and therefore as the “enemy” of humankind. The exemplar of this position is Thomas Henry Huxley, particularly as expressed in his

Stephen J. Pope is Associate Professor of Theology at Boston College, Chestnut Hill, MA 02167. He presented a version of this paper at the Sixth European Conference on Science and Theology at Cracow, Poland, 29 March 1996.

[*Zygon*, vol. 32, no. 2 (June 1997).]

© 1997 by the Joint Publication Board of *Zygon*. ISSN 0591-2385

famous 1893 Romanes Lecture "Evolution and Ethics" (Huxley 1893). Nature as Huxley sees it is the scene of continuous strife, combat between organisms, and the unmitigated struggle for survival. Nature itself is evil, ruthless, and savage.

Humans, the only beings in nature capable of morality, can conceive of justice in which punishment and reward are distributed according to violation of, and conformity to, socially acceptable rules of behavior. Such a system of distribution is to be found nowhere in nature, however. Indeed, rather than sanctioning morality, nature contradicts every moral sensibility that is found in civilized humanity. Innocent beings suffer what should only be the fate of the guilty. Ethical standards are upheld in spite of nature, not because of it: "Social progress means a checking of the cosmic process at every step and the substitution for it of another, which may be called the ethical process; the end of which is not the survival of those who may happen to be the fittest, in respect of the whole of the conditions which obtain, but of those who are ethically the best" (Huxley 1893, 91).

Science is an important weapon in this battle against nature, a claim very much in line with the Baconian view of science as intended for the "relief of man's estate." Huxley's position reflects a typically utilitarian approach to pain and suffering that influences strongly his rejection of Christian theism in general and the doctrine of Providence in particular. A benevolent deity, he claims, could not possibly have been the creator of such malevolence.

NATURE AS FRIEND

The second approach to nature is diametrically opposed to the first. In Christian counterpart to Huxley, Henry Drummond published his text *The Ascent of Man* one year after the appearance of Huxley's famous essay (Drummond 1894). Drummond argued that science should be properly understood not as antireligious but, on the contrary, as providing the strongest possible support for Christian theism. This claim depends upon interpreting the "great drama" of evolution in terms of what it produces—its highest and final product, humankind—and on the premise that the good of the whole is more important than the good of particular individuals. Rather than simply the "Struggle for Life" depicted by Huxley, evolution in Drummond's perspective is also "the Struggle for the Life of Others," and is thereby an "instrument of perfection the most subtle and far reaching that reason could devise" (Drummond 1894, 29).

Evolution is the method of creation chosen by God, whose moral purpose can be discerned in the historical progress of natural history.

Drummond envisioned a positive and constructive interplay of science and theology, with science informing theology of the means (that is, evolution) by which God creates and with theology providing for science the deepest religious and moral meaning of the objects of its study. In Drummond's view the evolutionary process is a steady march of progress that culminates in human altruism and love. Thus, "the perfecting of Love is thus not an incident in Nature, but everywhere the largest art of her task, begun with the first beginnings of life, amid continuously developing quantitatively and qualitatively to the close—all this . . . is the revelation of a purpose of benevolence and a God whose name is Love" (Drummond, 336). Tending to minimize natural evil, Drummond conceived of nature as sympathetic "friend" of humankind.

ASSESSMENT

Before exploring a third alternative, consider several of the weaknesses of these positions. First, these authors do not provide sufficient clarity regarding the meaning of basic terms such as *nature* or *love*. Second, they describe nature in simplistic terms—Huxley's is "red in tooth and claw"; Drummond's is a steady teleological movement toward perfection. Third, this oversimplification reinforces the development of simple dichotomies—for instance, Huxley's bald opposition of morality and nature. Fourth, the authors tend to argue by means of an excessive and uncritical use of analogies—for example, Huxley's repeated use of the military metaphor (morality "combats" nature) and Drummond's affective metaphor (nature is "the path of Altruism"; "Love is the final result of evolution" [Drummond 1894, 335]). Neither shows sufficient reserve in applying images taken from human life to natural processes and patterns.

Drummond spoke of animals as "self-sacrificial," of the "struggle" of evolution to bring forth mammals, and of love as the "goal" of evolution. The same anthropomorphism, however, is also found in Huxley's depiction of nature as "cruel" and "immoral" (Huxley 1893, 71, 76). For Huxley, however, the image of the human was malevolent rather than benevolent. Incidentally, Huxley introduced another kind of confusion when he depicted nature as *both* "amoral" and "unjust," as *both* antithetically opposed to morality and moved by "a rudimentary ethical process" (Huxley 1893, 111–12, n. 20). Despite their vehement opposition to one another, Drummond and Huxley engaged in the common practice of identifying what they perceived to be an end "intended" by nature and projecting this onto what are in fact products of nonintentional, nonrational natural processes.

NATURE AS CREATION

Saint Thomas Aquinas provides a third, and I think more plausible, position that avoids these flaws. In some ways, Aquinas might be thought to be more sympathetic with Drummond, not least of all as a theist. Drummond recognized the importance of teleology and final causality, appreciated the importance of hierarchy in nature, and understood the natural “part” in light of the “whole” of nature. His simplistic progressivism and illegitimate perfectionism would be at odds with realistic uses of evolutionary theory today—but unlike Huxley he at least attended to the beneficial dimensions of nature; the pervasiveness of cooperation, mutual aid, and parental care in the animal world; and the beneficial interdependence of different animals as parts of the same ecospheres.

In other ways, though, Aquinas’s position might be considered more aligned with that of Huxley, who contrasted strongly the natural order and the moral order and insisted that moral nobility admires, not “those who may happen to be the fittest,” but “those who are ethically the best” (Huxley 1893, 91). Huxley’s severe criticism of “fanatical individualism,” directed against Spencer and other social Darwinists (Huxley 1893, 92), has certain resonances with Aquinas’s concern with the common good.

The remainder of this article argues that Aquinas’s understanding of nature as creation is more reasonable than Huxley’s or Drummond’s. The critical foundation of Aquinas’s view of creation, as expressed in his *Summa theologiae* ([1266–73] 1948), is his belief that God is essentially “self-subsisting Being” (ST I, 44, 1; also ST I, 11 ad 3, 4) and therefore the “First Agent, who is agent only” (ST I, 44, 4). Unlike all finite beings who are both agent and patient, God as First Agent does not act to acquire an end (that is, to gain what God does not already possess). God does not act to attain another end but only “to communicate the divine perfection which is God’s goodness” (ST I, 44, 4). This form of action expresses the greatest liberality because it comes, not from need or utility, but from the divine goodness alone (ST I, 44, 4 ad 1; see also ST I, 19, 2 ad 3).

We tend to think of *creation* as an act or series of acts—as, for example, that of creating a watercolor painting. These particular acts of creation operate through what in one way or another is preexisting matter; but when Aquinas spoke of creation, he referred to the mode by which all things “emanate” from the First Principle (ST I, 45). It is the production of being as such, not the production of one or another particular being (ST I, 45, 5). Thus the evolution of a particular species, or even the emergence of life itself, would not be regarded as creation in this sense. By creation in the proper sense, Aquinas referred, not to particular acts of creation (for example, the generation of a child or the creation of

a bishop), but rather to the emanation of “all being from the universal cause” and “First Principle,” which is God. This is the sense in which he claims that “To create belongs to the action of God alone” (ST I, 45, 5). In creation, creatures neither act nor receive action, but they do attain relation to God as the principle of their being. Creation signifies essentially this relation (see ST I, 45, 3).

This discussion of creation helps to clarify the status of natural evil in relation to God, the issue upon which Huxley was so focused. Aquinas understood natural processes in terms of the philosophical and scientific categories supplied by Aristotle and, more important, the Christian doctrine of creation. The natural world was brought forth by God for the purpose of communicating the divine goodness to creatures and so that his creatures could, in various ways appropriate to their natures, represent the divine goodness to one another (ST I, 47). Evil is the result of God’s having created corruptible beings in a world marked by finitude and chance. Although real and sometimes painful, the evil experienced by individual creatures should be carefully and clearly distinguished from the good of the entirety of nature. The ineradicable corruptibility of finite creatures is in no way incompatible with the perfection of the universe as a whole. In Aquinas’s characteristic image, corruption of “part” of nature never leads to the corruption of the “whole” of nature (ST I, 48).

God wills the interdependence of natural organisms and the natural processes whereby some creatures survive through the deaths of other creatures. God wills, in other words, not only the generation but also the corruption of creatures. For this reason, God can be said to will evil, but the evil in these processes is not willed *per se* but only insofar as it serves some larger good, or the good of the whole of nature. Aquinas’s focus on the good of the whole, and the “fittingness” of the multitude and diversity of creatures, allowed him to acknowledge the real presence of evil in nature, more realistically than did Drummond, without falling into Huxley’s mistake of identifying this evil with the whole of nature.

Aquinas did not, therefore, deny the existence of the kind of pain, suffering, and evil within the natural world that appalled Huxley (and continues to disturb contemporary writers such as Annie Dillard [see Dillard 1985]). He was not scandalized by it because he always believed that God and not nature would distribute punishment and reward according to virtue and vice.

Odd as it may seem, Huxley’s view of nature (and that of his contemporary heirs) is much more sentimental than Aquinas’s. Huxley was disturbed that in nature “innocent beings” suffer for the “crime” of one. For Aquinas, however, it was in no sense reasonable to regard animals as subjects of guilt or innocence or as perpetrators of crime. Drummond,

of course, made the same false inference—but from what he took to be indicators of positive, rather than negative, traits. One cannot legitimately generalize that animal predation, in which some organisms benefit at the expense of others, represents the entire character of nature. Predation is the way in which some animals survive and live to reproduce, and the various kinds of pain that it occasions ought not to obscure from our minds the wonder, beauty, and marvelous patterns of order in the natural world.

Aquinas recognized that the privation of good could sometimes have terrible consequences for human beings (both morally, as perpetrators of evil, and passively, as victims of evil). God wills the existence of the created will, which is naturally deficient and subject to corruption and at the same time naturally free, to be capable of choosing evil as well as good in specific situations. This freedom is the context for positive human responses by those who have suffered from the evil of others, responses that range from “fraternal correction” to forgiveness (ST II-II, 32, 2)—always, as the traditional axiom has it, hating the sin but loving the sinner (ST II-II, 25, 6).

God, of course, by no means directly wills moral evil, *malum culpae*. When the effect of natural evil is experienced in human life, Thomas held, the appropriate human response is to care for those who suffer—for example, in the corporal works of mercy (ST II-II, 32, 2)—neither “overcoming” nor “befriending” nature but exercising the theological virtue of hope in a supernatural “solution” to evil.

This conception of nature as creation stands in direct contradiction to the previous positions. Human beings can be friends or enemies with God but not with nature. Aquinas appropriated Aristotle’s claim that friendship is characterized by three conditions—benevolence, mutuality, and communication (Aristotle, 1962, 214–30)—and argued that all of these characterize the human-divine relation in charity. For our purposes it is important to note that none of these traits can characterize the relation between nature and humanity.

As creation, nature is “good” in that it has being. According to Aquinas all things “desire” (*appetunt*) God as their end in an analogous sense, whether this desire is intellectual, sensible, or natural (that is, without cognition) (ST I, 44, 4 ad 3). By “desire” Aquinas meant a movement toward a suitable good. Thus plants “desire” what is good for them when their functions attain it—for example, when green plants obtain sugars by means of photosynthesis. Thus a plant “desires” its own good in the sense that it moves toward its own good and comes to obtain it. Aquinas made the further claim that, as a thing moves toward (“desires”) its own concrete good, it also moves toward (“desires”) God as its end. Attaining one’s own good is simultaneously “attaining” God in the sense of becom-

ing more like God. This is because God is that Being who is fully actualized, that Being whose existence is the full and perfect attainment of God's own good. Thus, to the extent that a particular creature attains its own good and actualizes its own nature, it "moves toward" God (see ST I-II, 1, 8). This is the meaning of claiming that nature in its parts and whole is good "by participation."

This ontological sense of goodness, however, is not to be confused with the kind of moral goodness or virtue that is the condition of friendship between human beings. For Aquinas true friendship (*amor amicitiae*, as opposed to *amor concupiscentiae*) can only be shared by those who are equals in some sense, particularly in their rational nature. Friendship reflects the voluntary decision of a free agent to regard another free agent with affection and benevolence, a choice obviously possible only for beings possessing the capacity of free will. Neither the totality of nature as such nor particular natural entities possess will and therefore they cannot be properly characterized as either friend or enemy. Grace empowers us to develop genuine "love of friendship" with fellow human beings and with God. We love animals and inanimate objects out of charity, Aquinas said, "if we regard them as the good things that we desire for others, insofar, to wit, as we wish for their preservation, to God's honor and man's use" (ST II-II, 25, 3).

Nature is therefore to be regarded as an "instrument" (though not in a modern, Baconian sense) for the service of God. If Aquinas's theology makes it impossible to understand nature as friend, so it also prohibits the opposite relation, that of enmity and bad will. The ideal perfection of charity is to overcome evil by good, to convert the enemy into the friend—a goal that is proper to human relations but inconceivable in relation to nature. Nature cannot possibly respond rationally to human acts and has no capacity to provide the kind of reciprocity, good will, and communication appropriate to our relation with one another and with God.

CONTEMPORARY VOICES

In our own day authors continue to refer to nature as "enemy," "friend," and "creation," but the interpretations of these terms, and the relations between them, is more complex than in the writings of the nineteenth-century authors discussed above. In this century massive urbanization, the ecological crisis, magnificent developments in the life sciences, and a host of other factors have led to both an increased emphasis on our kinship with nature and a corresponding sense of moral responsibility for our role within it. Theologians and philosophers seem more and more likely to speak positively of nature than to echo Huxley's aversion.

There are contemporary exponents of Huxley's "gladiatorial" approach to nature, perhaps most emphatically the sociobiologist George C. Williams, author of *Adaptation and Natural Selection*. Williams desires to use sociobiology to "characterize the enemy more clearly than was possible in Huxley's time" (Williams 1988, 403). Genes are concerned only with self-replication, and organic life follows suit in exploiting any opportunity for inclusive fitness maximization, whatever the cost in pain and suffering for other organisms. "Nothing resembling the Golden Rule or other widely preached ethical principle is operating in living nature" (Williams 1988, 391). Moral indifference might characterize the physical world, but the material world is marked by pervasive "immorality." Nature is simply a "process of maximizing short-sighted selfishness," which leads to results that are "grossly immoral" (Williams 1988, 385). Examples range from "sexual sins" (such as incest, adultery, and rape) to infanticide, cannibalism, and other forms of murder generated by the "inescapable arithmetic of predation and parasitism" (Williams 1988, 398). How, then, are we to respond to nature? We are to wage a "twofold attack on the natural enemy and any institutional enemies favored by cultural evolution. In Darwin's words . . . we must 'rebel against the tyranny of the selfish replicators'" (Williams 1988, 403).

At the other end of the spectrum from Williams are those authors who speak of nature as "friend," often in an effort to underscore the value of animal species or ecospheres or of nature as a whole (for example, Shepard 1993; review in Jung 1993). On first glance, advocates of "biophilia" seem to exemplify this approach, but the *philia* in this term tends to refer, not to the "friendship" of Greek philosophy, but rather to the more-general sense of emotional affiliation with nature (see Wilson 1993, 31). This interpretation is reflected in the theological ecology of Sallie McFague, for whom divine friendship implies caring for the earth, which is metaphorically God's "body." However, McFague's definition of *friendship* as "a bonding of two by free choice in a reciprocal relationship" (1987, 162) precludes the possibility of true friendship with nature. For some, the very survival of our own species on this planet depends on transforming our instrumentalist eros for nature into an agapic love that generates beneficence toward, caring for, and harmony with nature (see Orr 1993, 426–30). These traits, however, are not to be identified with friendship, which when applied to this relation sentimentalizes nature to the point of obscuring its destructive dimensions, its frequent indifference to virtue and merit, and its radical incapacity for genuine love, the mark of friendship properly construed.

Those who use affective terms to describe the human-nature relation now do so with greater care than did Drummond. The theologians who

employ affective language generally interpret nature in light of the theological image of creation. This point can be illustrated in the writings of two theologians: Roman Catholic Elizabeth A. Johnson, C.S.J., and Lutheran Philip Hefner.

Johnson stands in sharper contrast to the “gladiatorial” approach to nature of Huxley and Williams. Wonder at the power and beauty of creation, she argues, ought to replace the ravenous modern instrumentalism that has led to the devastation of nature. Johnson speaks of “repairing” nature (1996, 86ff.) and implores us to a deep sense of ecological responsibility grounded in the theology of creation. Drawing explicitly from Thomas Aquinas, Johnson holds that creation “participates” in divine beauty. Creatures, for instance, “reveal it in flashes of speed, methods of feeding, and all their intricate, mysterious workings” (Johnson 1996, 89).

Creation also is marked by “brokenness” and is marred by conflict, pain, and suffering (not least, Williams would add, in “methods of feeding”!), which Johnson interprets in terms of its eschatological finality. Even today God is “flashing out in the world and in particular bent over brokenness and anguish, moving to heal, redeem, and liberate” (Johnson 1996, 90). “The natural world,” she writes, “is involved in this drama of salvation, groaning in the present age but with the hope that it ‘will obtain the freedom of the glory of the children of God’ (Rom. 8:21)” (Johnson 1996, 91).

Nature is the gift of a loving God, and we are to love it, despite the pain, suffering, and brutality it engenders. Drawing explicitly on Aquinas, Johnson argues that all creatures “participate in” divine goodness by acting in ways characteristic of their species. We are responsible for promoting the flourishing of all creatures inasmuch as it is in our power. Our imitation of divine “compassion for the world” (Johnson 1996, 93) entails ecological responsibility: “action on behalf of justice for the earth participates in the compassionate care of God, who wills the well-being of the whole interdependent community of life and opposes whatever mars or destroys divine glory in the world” (Johnson 1996, 94). In this context she echoes Hefner, concluding that “human beings become, quite literally, partners and co-creators with ‘the Love that moves the sun and the other stars’” (Johnson 1996, 94).

Lutheran theologian Philip Hefner shares many of Johnson’s commitments, including an emphasis on the “naturalness” of the human, the interconnectedness of humans and nature, and the goodness of creation. Hefner, like Johnson, conceives of nature most fundamentally as creation. Creation is characterized as “good.” Indeed, its goodness leads Hefner to speak of nature as our “friend” (Hefner 1994). The processes of nature provide for the fulfillment of the human person and not

simply for our oppression and eventual destruction. According to Hefner, the “myth” of *creatio ex nihilo* expresses the Christian belief that nature came to exist as a result of the free creative act of a loving deity, and the “myth” of *creatio continua* expresses Hefner’s belief that the real significance of evolutionary history, including the process of natural selection in all its indiscriminate brutality, can only be comprehended eschatologically—that is, by what is finally produced by this process (Hefner 1993, 44).

Hefner’s anthropology coheres with his view of nature (as it does with all of these writers). Although his notion of the “natural” is different from Aquinas’s, Hefner shares with Aquinas a view of the person as “thoroughly natural” (Hefner 1993, 79) and as a being who is called to use the gift of freedom in a responsible and humane way. Rather than “warriors,” we are “created co-creators,” agents who cooperate with the Creator in bringing not only human society but also the natural world itself to its proper fulfillment.

According to Hefner nature is our friend in the sense that it is “grounded in love” and is “an ambiance in which we truly belong” (Hefner 1994, 508); “nature is rooted in love and therefore truly is our friend” (Hefner 1994, 525). The “therefore” in this claim would have baffled Aquinas, but a more important commonality is the acknowledgment that nature is distinct from, and dependent upon, God: it is the context for, rather than the source of, grace.

Human beings have a theologically grounded moral obligation to promote the flourishing of nature. Whereas Aquinas generally advocated consenting to our place in nature, Hefner insists that as co-creators humans are characterized by “doing unto nature rather than accepting a place within it” (Hefner 1993, 67). This benevolence toward nature and our reciprocal acknowledgment of the fact that nature is beneficial for us is not to be confused with the deeper kind of mutual love that characterizes true friendship.

CONCLUSION

We can conclude with three generalizations. First, the theology of creation allows us to appreciate with Drummond the limited but real goodness of nature. It also allows us with Huxley to acknowledge nature’s real but limited evil. Both sides of nature must be recognized but kept in proper perspective within the ordering of creation. For our recent authors the doctrine of creation reinforces and promotes an awareness of our interdependence with nature as well as of the many ways in which we simply depend upon it for our existence and flourishing.

Second, the doctrine of creation inspires not only an acute sense of what we receive from nature but also a complementary sense of our

responsibility to care for nature and to exercise stewardship over it. This “unilateral” feature of our relation to nature intensifies the sense of responsibility that flows from the love of nature. Beneficence toward nature is in order. Perhaps one can “befriend” nature in the sense that one can have good will for it, and one can even say, with proper qualification, that nature metaphorically “befriends” us in the sense that it provides for some of our needs.

Third, at least from a Thomistic theological standpoint, nature is not properly conceived of as either enemy or friend because these relations are not intelligible outside the freedom that is essential to personhood. Friendship exists only when one is able to will good to another; this element of friendship, along with the experience of benefiting from nature, may lie behind the claim of some that we can be friends of nature. It is crucially important for theological reasons for us to recognize that because nature is neither human nor divine, it is not the proper object of either enmity or friendship. In light of the doctrine of creation, we are to appreciate and love nature for its relative goodness, to struggle against it and sometimes, at least, to endure the evil it inflicts on us. Most important, we are to acknowledge that in the context of nature we are called to the most profound of all forms of friendship, that made possible by divine grace.

REFERENCES

- Aquinas, Thomas. [1266–73] 1948. *Summa theologiae*. Rome: Marietti.
- Aristotle. 1962. *Nicomachean Ethics*. Trans. Martin Ostwald. Englewood Cliffs, N.J.: Prentice Hall.
- Dillard, Annie. 1985. *Pilgrim at Tinker Creek*. New York: Harper and Row.
- Drummond, Henry. 1894. *The Ascent of Man*. New York: James Pott and Co.
- Hefner, Philip. 1993. *The Human Factor: Evolution, Culture, and Religion*. Minneapolis: Fortress Press.
- . 1994. “Can Nature Truly Be Our Friend?” *Zygon: Journal of Religion and Science* 29 (December): 507–28.
- Huxley, Thomas Henry. 1894. *Evolution and Ethics*. New York: D. Appleton.
- Johnson, Elizabeth A. 1994. *She Who Is: The Mystery of God in Feminist Theological Discourse*. New York: Crossroad.
- . 1996. “Heaven and Earth Are Filled with Your Glory.” In *Finding God in All Things: Essays in Honor of Michael J. Buckley, S.J.*, ed. Michael J. Himes and Stephen J. Pope, 84–101. New York: Crossroad.
- Jung, L. Shannon. 1993. “Animals in Christian Perspective: Strangers, Friends, and Kin?” In *Good News for Animals: Christian Approaches to Animal Well-Being*, ed. Charles Pinches and Jay B. McDaniel, 47–61. Maryknoll, N.Y.: Orbis Books.
- Kellert, Stephen R., and Edward O. Wilson, eds. 1993. *The Biophilia Hypothesis*. Washington, D.C.: Island Press.
- McFague, Sallie. 1987. *Models of God: Theology for an Ecological Nuclear Age*. Philadelphia: Fortress Press.
- Orr, David W. 1993. “Love It or Lose It: The Coming Biophilia Revolution.” In *The Biophilia Hypothesis*, ed. Stephen R. Kellert and Edward O. Wilson, 426–30. Washington, D.C.: Island Press.
- Shepard, Paul. 1993. “Our Animal Friends.” In *The Biophilia Hypothesis*, ed. Stephen R. Kellert and Edward O. Wilson, 275–300. Washington, D.C.: Island Press.

- Williams, George C. 1988. "Huxley's Evolution and Ethics in Sociobiological Perspective." *Zygon: Journal of Religion and Science* 23 (December):383-407.
- Wilson, Edward O. 1993. "Biophilia and the Conservation Ethic." In *The Biophilia Hypothesis*, ed. Stephen R. Kellert and Edward O. Wilson, 31-41. Washington, D.C.: Island Press.