

Where the wild things are: environmental preservation and human nature

MARC ERESHEFSKY

Department of Philosophy, University of Calgary, 2500 University Drive NW, Calgary, Alberta, T2N 1N4, Canada (e-mail: ereshefs@ucalgary.ca)

Received 27 September 2005; accepted in revised form 21 December 2005

Key words: Environmental preservation, Human culture, Human nature, Human/nature dichotomy, Natural, Wilderness

Abstract. Environmental philosophers spend considerable time drawing the divide between humans and the rest of nature. Some argue that humans and our actions are unnatural. Others allow that humans are natural, but maintain that humans are nevertheless distinct. The motivation for distinguishing humans from the rest of nature is the desire to determine what aspects of the environment should be preserved. The standard view is that we should preserve those aspects of the environment outside of humans and our influence. This paper examines the standard view by asking two questions. First, are the suggested grounds for distinguishing humans from the rest of the environment viable? Second, is such a distinction even needed for determining what to preserve? The paper concludes that debates over whether humans are natural and whether humans are unique are unhelpful when deciding what to preserve.

Introduction

A central question in environmental philosophy is deciding which environments to preserve. The common response is ‘preserve wilderness.’ But this answer raises further questions. There is the normative question, why *ought* we preserve wilderness? Then there is the metaphysical question, what is wilderness? If we are to preserve wilderness, we need to distinguish what is wild from what is not wild. The standard answer to the second question is that those aspects of the environment outside of humans or human influence are wild (Norton 1986; Taylor 1986; Brennan 1988; Rolston 1989, 1991[1998]; Callicott 1991[1998], 1996a, b; Elliot 1997; Katz 1997; Hettinger and Thorp 1999; Woods, forthcoming). Hence, those facets of the world outside the sphere of humans are candidates for environmental preservation. The line of reasoning offered for what distinguishes humans from the rest of nature is intended to be *descriptive* not *normative*. Biology and the social sciences are supposed to tell us what distinguishes humans from the rest of nature. That scientifically informed difference then tells us what is wild and what are the candidates for environmental preservation.

The philosophical literature contains two views on what divides humans from the rest of nature. One view highlights the distinctive nature of humans and suggests that such a difference renders humans, or certain human actions,

unnatural (Norton 1986; Brennan 1988; Rolston 1989, 1991[1998]; Elliot 1997; Katz 1997; Hettinger and Thorp 1999). Wilderness, then, is outside of humans and their unnatural activities. The other view allows that humans are natural and highlights what is distinctive about humans (Callicott 1991[1998], 1996a, b; Woods, forthcoming). What is outside of that distinctive human feature is then considered wild and a candidate for environmental preservation.

Various human characteristics have been proposed for distinguishing humans from the rest of the environment. This paper raises two questions concerning such proposals. First, are the suggested criteria for distinguishing humans from the rest of the environment viable? Second, if humans are distinctive, does that distinction provide the basis for determining what to preserve? As we shall see, the answer to the first question is mixed. Few of the suggested criteria for distinguishing humans from the rest of the environment are viable. Nevertheless, some of the suggested distinctive features of humans are unique to humans. Human culture is distinctive. That brings us to the second question. Does the uniqueness of human culture provide the grounds for determining which parts of the environment to preserve? As we shall see, human uniqueness is neither necessary nor sufficient for determining what is a candidate for preservation. Deciding what is a candidate for preservation depends on a prior decision concerning what we want to preserve, not on whether humans are different. Furthermore, deciding what to preserve does not depend on determining what parts of the world are natural. Arguments over the concept of 'natural' and human uniqueness are at best a distraction when deciding what to preserve.

This might sound like a negative conclusion. But it is meant to be a positive one, though in an indirect way. If we want to preserve parts of the environment, we should formulate the strongest possible arguments for such preservation. Debates over the definition of 'natural' or the uniqueness of humans do not further the case for protecting the environment. Instead we should focus on such questions as: Which parts of the environment do we value? And, what is the best means for preserving those parts of the environment? Answers to these questions do not hinge on deciding what is unique about humans, nor do they turn on deciding what is natural. By dropping discussions of human uniqueness and what is natural we clear the ground for stronger arguments for environmental preservation.

Human actions

There are three ways that environmental philosophers draw the distinction between humans and the rest of nature. One way of distinguishing humans turns on which human actions are unnatural. A second way concerns human's distinctive influence on Earth's environment. And a third way concerns the uniqueness of human culture. Each of these approaches to distinguishing humans will be discussed. Let us start with human actions.

Many authors consider all human actions and influence unnatural (Taylor 1986; Rolston 1991[1998], 1994; Elliot 1997). Brennan (1988) and Katz (1997) suggest a more subtle view of naturalness and human actions. Brennan and Katz believe that there is a distinction between the natural and unnatural, but that distinction does not fall along the lines of what is non human and human. According to Brennan and Katz, some human actions are natural, while other human actions are unnatural. Furthermore, those aspects of the environment that are affected by natural human acts remain natural and wild, while those aspects of the environment that are affected by unnatural human acts are unnatural and no longer wild. Their suggestion for what is wild turns on what they think distinguishes natural from unnatural human acts. The crucial question, then, is how do Brennan and Katz separate natural from unnatural human actions?

Brennan and Katz suggest that natural human actions were selected by natural selection in our ancestors, whereas unnatural human actions were not selected by natural selection. Consider Katz's explanation.

All human activity is not unnatural, only that activity which goes beyond our biological and evolutionary capacities... In this sense, then, human actions can also be judged to be natural – these are the human actions that exist as evolutionary adaptations, free of the control and alteration of technological processes. (Katz 1997, p. 104)

Brennan offers two examples of natural human behavior. The first example concerns the popularity of 'natural' diets. What is a 'natural diet'? Brennan responds "[w]e would find that [a] diet was natural for us by discovering the kind of diet for which we are adapted" (1988, p. 89). We are selected by natural selection to have certain diets, and those diets are the natural ones. The other example Brennan offers is childbirth. "Childbirth is an especially striking example of the wilderness within us, and it is only one of several cases where we can appreciate the natural first hand" (Brennan 1988, p. 91). The line of reasoning that Brennan and Katz have in mind is the following. Natural human actions are the result of natural selection. Unnatural human actions are due to human intervention. Turning to the environment, those aspects of the environment affected by natural human acts remain natural, whereas those aspects of the environment affected by unnatural human actions are unnatural and not wild.

Brennan and Katz's distinction presupposes a biological difference between natural and unnatural human states. However, as Sober (1980, 1986) has shown, the distinction between natural and unnatural states has no home in contemporary biology. Aristotle and many other preevolutionists believed that organisms have natural states. An organism's natural state is the phenotype an organism would have if there is no interference during reproduction or ontogenetic development. Sober shows that the natural state model is at odds with contemporary biology by citing population genetics and the norm of reaction. The norm of reaction plots the different phenotypes a single genotype will have in different

environments. Suppose genetically identical corn seeds are planted in soils with varying mineral content. The norm of reaction plots the different heights the seeds have in those different soils. The norm of reaction does not single out any particular phenotype as the natural one. Each phenotype is the upshot of a genotype in a different environment. All phenotypes are equally natural, or equally unnatural for that matter, for there is no natural/unnatural phenotype distinction. When it comes to contemporary genetics, no phenotype, whether it be physiological, behavioral, or cognitive, is considered the natural one.

Let us apply this result to Brennan and Katz's distinction between natural and unnatural human actions. Brennan and Katz suggest that natural human states are due to natural selection, whereas unnatural human states are due to other factors. Yet a key component of biology, population genetics, makes no distinction between the natural and unnatural states of organisms. Every human state, including cognitive and behavioral states, is merely the upshot of a human's genetic content, environmental input, and development. Genes vary, so do environments and developmental processes. Biological theory, particularly population genetics, does not distinguish natural genes, environments, or developmental processes from unnatural ones. Brennan and Katz attempt to draw the distinction between natural and unnatural human acts according to evolutionary biology, but no such distinction exists in evolutionary biology.

Brennan and Katz's distinction between natural and unnatural human actions faces another problem. This problem turns on Lewontin's (1983[2001]) observation that organisms select and construct their own environments – what some call 'niche construction' (Odling-Smee et al. 2003). Brennan and Katz assume that we can separate human actions that are the result of natural selection from those actions that are due to non-selective causes. This assumes that there has been a selective environment for humans that has not been tampered with by humans. However, Lewontin argues that the environments of organisms are in part caused by organisms themselves. A number of organisms alter their environments, for example, beavers build dams and ponds, and termites in Africa and Australia build extensive mounds. In addition, organisms are often instrumental in determining their niche. Lewontin (1983[2001], p. 66) offers the example of the ancestors of sea mammals moving to the ocean. By moving to an aquatic environment, the selection pressures affecting such mammals shifted. Lewontin's point is that an organism's environment is often affected or constructed by an organism's activities. Thus there are rarely pure selective environments, unaffected by the organism itself.

This is a very general biological point, but it is particularly apt for humans. We pervasively affect our environment, and in doing so we affect the selection pressures that act upon us. Consider the number of medical conditions that people would die from if there was no advanced medical technology. Type I diabetes, otherwise known as juvenile or insulin-dependent diabetes, usually strikes people early in their teens. Before the discovery of insulin, Type I diabetics often died within one year of diagnosis. Since the discovery of insulin, Type I diabetics live much longer. Humans changed the selective environment

for Type I diabetics by introducing insulin, specialized diets, and technology for measuring blood sugar levels. This human-induced environment has dramatically increased the fitness of diabetics. The case of diabetes is not unusual. Asthmatics, ecliptics, and a vast number of other humans take medicines that render their conditions less maladaptive.

Human constructed environments affect human fitness in other ways. Clark (1997) and Griffiths and Stotz (2000) suggest that such cognitive capacities as language and even the ability to grasp objects depend on human social structures. Griffiths and Stotz write that such capacities are ‘situated.’

Situated cognition takes place within complex social structures which ‘scaffold’ the individual by means of artifactual, linguistic, and institutional devices. When applied to cognitive development these approaches suggest that culture makes humans as much as the reverse (Griffiths and Stotz 2000, p. 45).

In other words, some human cognitive capacities depend for their existence on the social structures we construct. Human constructed environments are pervasive, so much so that there may be no natural human environments, that is, human environments not manipulated by humans. In fact, humans have always occupied environments affected by humans, for social structures predate us. We inherited and altered many social behaviors from our pre-human ancestors (Griffiths and Stotz 2000, p. 45; Sterelny 2003, 143). Human environments have always been constructed.

Returning to Brennan and Katz, they suggest that the divide between what is natural and what is unnatural turns on which human actions are natural and which ones are unnatural. Their notion of natural human acts turns on the assumption that some human actions were selected for by natural selection in environments not manipulated by humans. But there are no such environments, and consequently no ‘natural’ human actions. Brennan and Katz’s divide between natural and unnatural human actions is undermined by considerations from population genetics, evolutionary biology, and human evolution.

Human influence

Another definition of ‘natural’ turns on what is affected by human influence. For example, Paul Taylor in his *Respect for Nature* writes:

“[N]atural” in the sense meant here is the fact that the biological and environmental factors determining the structure of relationships holding among their constituent species-populations take place without human intervention. (Taylor 1986, p. 4)

Human intervention in the environment can be direct, such as the cutting of timber, or indirect, such as the effects of air pollution. What is left as

natural are parts of the environment outside the sphere of human influence. Taylor (1986, pp. 3–4) believes that there are “genuinely natural ecosystems” – ones that have never been affected by humans. Katz (1997, pp. 103–104) and others, however, doubt whether there any such natural environments. Katz writes that “no part of the natural world lies untouched by our pollution and technology.” He concludes that “nothing natural truly exists (anymore).” Taylor anticipates this problem. Taylor grants that human effects on the environment are “becoming ubiquitous” and that if current trends do not change we will see “the natural environment of our planet turned into a vast artifact” (1986, pp. 4–5). Taylor suggests that we should think of the naturalness of an ecosystem as a matter of degree. Some environments are more or less natural according to the degree of human interference with its biological processes.

I will not take up the issue of whether an attribute like naturalness can come in degrees. Instead, let us focus on a question often raised in environmental philosophy. Why are human modifications of the world unnatural, whereas the effects of non human organisms are considered natural? As many authors point out, non human organisms modify their environments. Consider the oft-cited example of beaver dams and how such dams affect ecosystems (Elliot 1997, p. 119). Given that non human organisms affect the environment, we need to know what is distinctive about human’s influence on the environment. What renders our influence on the environment, but not the influence of other organisms, unnatural?

One response is the degree to which humans affect the environment. We more dramatically affect ecosystems than beavers when we build our dams, clear-cut forests, and clear large tracts of land for agriculture. Many human actions cause widespread destruction of the environment, so we more significantly affect the environment than non humans. But even this putative distinction between humans and the rest of nature has come under attack. Callicott (1996b, p. 371) and Elliot (1997, p. 119ff.) point out that humans are not alone in causing the demise of vast ecosystems. They cite the widespread destruction caused by volcanic eruptions, earthquakes, droughts, and floods.

Callicott (1996b) takes a different approach in determining what is distinctive about human influence. Callicott writes,

Species extinction is not unnatural. On the contrary, species extinction – anthropogenic or otherwise – is perfectly natural. But the current *rate* of extinction is wildly abnormal. (1996b, p. 371)

First it should be noted that Callicott believes that humans are natural because humans are the result of evolutionary forces (1991[1998], p. 350). Moreover, he believes that our actions and our influence on the environment are natural (1996b, p. 370). Nevertheless, Callicott maintains that humans are unique and different from the rest of nature. We have caused a “wildly abnormal” rate of extinction and by doing so we are different.

What does Callicott mean by ‘abnormal’? He suggests the following: “Normally, speciation outpaces extinction – which is the reason why biodiversity has increased over time” (1996b, p. 371). So, an abnormal rate of extinction occurs when the rate of extinction outpaces the rate of speciation. Callicott is correct that humans are the cause of a rate of extinction that outpaces the rate of speciation, that is, humans are the cause of what biologists call ‘mass extinction.’ However, we are not alone in causing such a rate of extinction. According to Ridley (1993, p. 613), between 5 and 23 mass extinctions have occurred since the Cambrian period. All of these mass extinctions occurred before the existence of humans. Moreover, past mass extinctions were more extreme than anthropogenic extinction. Humans have killed many species, but the number of species we have killed does not match the numbers killed in past abiotic caused extinctions. In the Permian extinction, for example, as much as 96% of all marine species and 50% of all animal species went extinct; in the Cretaceous extinction between 60 and 75% of all marine species went extinct (Ridley, 1993, p. 601).

Aitken (1998, p. 399) responds that even though anthropogenic mass extinction has not yet outpaced past mass extinctions, “[a]nthropogenic mass extinctions differ – *or will have differed if we don’t change our ways* – from past extinctions in their persistence.” Anthropogenic extinctions, Aitken (*ibid.*) writes, will “continue without limit” until we go extinct or change our ways. Notice that Aitken is not asserting that anthropogenic mass extinction *will* outpace previous mass extinctions; Aitken is asserting that anthropogenic extinctions will overtake other extinctions *if* we do not change our ways or go extinct first. Aitken takes the possibility that anthropogenic extinction might be more extreme than past extinction events to mark a difference between anthropogenic and past extinction events. Notice that Aitken has not given us a distinction, but a promissory note for what might be a distinction. The problem is that we do not know whether that distinction will come to be. Humans might change their ways and greatly diminish their harm to the environment, or humans might go extinct before anthropogenic extinction outpaces other extinction events. We simply do not know. In the future human anthropogenic extinction may make us unique, but at this point in time anthropogenic extinction does not make us distinct.

Norton (1986) offers another suggestion for how anthropogenic mass extinction differs from other mass extinctions. Norton writes:

There have, of course, been major “extinction events” in the past, marking the end of geologic and climatological eras. While these events may have approached currently expected species losses in total numbers, they were spread over much longer periods of time, measured in millennia. (1986, p. 270)

Norton’s suggestion is that humans are causing mass extinction at a higher speed than previous mass extinctions. The speed at which we are causing mass

extinction thus renders human's influence on the environment distinctive. This claim, however, is at odds with the view that at least some past mass extinction events were caused by the sudden impact of a comet or asteroid striking Earth (Gould 1989; Primack 1993). Such impacts are thought to cause nuclear winters, which in turn cause mass extinction within a year. Such mass extinctions are more rapid than anthropogenic mass extinctions.

Let us back up a bit. Recall that Taylor and others suggest that what is natural and a candidate for preservation is outside of human influence. I have followed up on that suggestion by asking why should our influence, and not the influence of other biotic and abiotic factors, cause environments to be no longer natural or wild. Minimally, there must be something distinctive about our influence on the world. But as we have seen, our influence upon the biological world is not clearly distinctive, not even when we are talking about mass extinction.

There is a more fundamental issue here. Independent of whether our affect on the environment is distinctive, why think environments unaffected by humans are the only candidates for preservation? Conservation efforts such as environmental restoration or active habitat management are human interventions in the environment. Such activities are a type of human influence on the environment. Some (for example, Elliot 1997) argue that environments restored or managed by humans are less valuable than ones not affected by us. Nevertheless, many believe that restoring or managing habitat is better than doing nothing at all. If we value restored or actively managed environments then we value some instances of human influence on the environment. If we value such environments, then some candidates for preservation are environments heavily influenced by humans. Determining whether an environment is affected by human influence, and thus no longer wild or natural, is insufficient for determining whether that environment is a candidate for preservation. If there are environments unaffected by humans we may choose to preserve those environments. But there are also environments affected by humans (through management, restoration, pollution, or use) that we wish to preserve.

Human culture

Another frequently cited ground for distinguishing humans from nature is human culture. This distinction is cited in anthropology, biology, and philosophy. Rolston (1989, 1991[1998], 1994) and Elliot (1997) believe that human culture causes humans to be unnatural. For Callicott (1996a) and Woods (forthcoming), human culture does not make us unnatural, but it marks an important distinction between us and the rest of the world. For all of these authors the phenomena of human culture draws a divide between us and those parts of the world that are wild and candidates for environmental preservation.

Environmental philosophers suggest three distinctive features of human culture: (1) Transfer of information through non-genetic channels; (2) Devel-

opment of complex tools and technology; and (3) Insulation from natural selection. Two questions should be raised concerning these suggested features. First, are such features unique to humans? Second, if they are unique, do such features provide the basis for deciding what is natural, wild, or a candidate for environmental preservation? This section examines whether any of these suggested features are unique to humans. As we shall see, some of these features are distinct to humans. In the next section, we explore whether such unique human properties provide the grounds for deciding what is natural, wild, or a candidate for preservation.

Transfer of information through non-genetic channels

A common view is that humans are unique in how we transmit information. For example, Rolston writes:

Information in wild nature travels intergenerationally on genes; information in culture travels neurally as persons are educated into transmissible cultures ... In nature, the coping skills are coded on chromosomes. In culture, the skills are coded in craftsman's traditions, religious rituals, or technology manuals. (Rolston 1991[1998], p. 368; also Elliot 1997 and Callicott 1996a)

In other words, a significant divide between humans and other organisms is that humans transmit information through genes and other modes of transmission, whereas non human organisms only transmit information genetically. Consider, also, what Elliot (1997, p. 128) writes: "In nature, information is transmitted genetically and it does not include acquired information."

There are two problems with drawing the cultural distinction between humans and non humans in this way. First, there are well documented cases of non genetic information transfer among conspecific non human organisms (Avital and Jablonka 2000). Most birds learn their calls from their parents, and the members of many mammalian species communicate. The blanket claim that only humans transmit information by non-genetic means is too strong. Nevertheless, Rolston and Elliot would be correct if they asserted that the amount of non-genetic information humans store and share is unique. Arguably, we store and transmit much more non-genetic information than other organisms. Just think of the amount of information we store in books and computers. Even among those that debate whether some non human primates have language, there is agreement that the complexity of human lexigrams, not to mention the number of lexigrams we produce, greatly outstrips those used by the best trained Bonobo (Greenfield and Savage-Rumbaugh 1990; Tattersall 1998).

The other problem with Rolston's view is that it attributes culture to only humans (for Rolston, culture does not exist in "wild nature"). Yet a number of

biologists and anthropologists believe that the activities of many animals count as culture. The standard description of culture by biologists and social scientists is the transmission of non-genetic information through some form of social learning (Ehrlich 2000, p. 5; Boyd and Silk 2000, 603). Thus, Boyd and Silk write, “culture is common among other organisms” (2000, p. 608), adding that there are “hundreds of well-documented examples of cultural variation in nonhumans” (2000, p. 609). This is not to say that human culture and non human culture are the same. While many organisms have culture, few display signs of significant cultural evolution. Humans are unique in the amount of non-genetic information we accumulate, transmit, and transform (Boyd and Silk 2000, pp. 608–612; Sterelny 2003, 171). Callicott, Elliot, and Rolston are right to highlight the uniqueness of human culture, but wrong in shortchanging the existence of culture in non humans.

Development of complex tools and technology

Callicott (1996a, p. 146), Elliot (1997, p. 128), and Rolston (1991[1998], pp. 368–369) suggest that our ability to transmit non-genetic information causes us to be unique in our construction of complex tools and advanced technology. This seems right: we do have distinctively elaborate tools and technologies when compared to other organisms. Of course other organisms do have tools. Consider the striking case of Western African chimps that have passed down a set of nut cracking tools for over a 100 years, replacing and altering those tools so they become more effective (Mercader et al. 2002). Still, the complexity of human tools and human technologically is clearly distinct. Compare a nut cracking tool to a bulldozer or a supercomputer.

Insulation from natural selection

Human tools and technologies are thought to cause a further distinctive feature of human culture: our ability to insulate ourselves from natural selection. According to Rolston, “[n]atural selection pressures are relaxed in [human] culture” (1991[1998], p. 368). So much so that, according to Elliot, humans have “transcended the natural” (1997, p. 123). The idea here is that human technology tempers the effects of natural selection on humans. For instance, we have medical technologies that ward off diseases, and some human cultures build dams, irrigation systems, and food distribution networks that eliminate the problem of scarce food.

I am less sanguine about this alleged distinctive feature of humans. We have made ourselves less vulnerable from the ravages of disease and hunger. Nevertheless, pathogens keep attacking and killing humans, and depressingly large numbers of humans continue to die from malnutrition. Given these facts, one might wonder how well we insulate ourselves from the pressures of selection. Furthermore, one might wonder whether we insulate ourselves much

better than some other organisms. Many species of organisms do a better job at insulating themselves from the forces of natural selection than humans. For example, countless numbers of insect species are flourishing. In terms of biomass, number of species, or ecological diversity, insects are doing better than us in the face of natural selection. And then there are the rodents. Dawkins (2004) has some apocalyptic thoughts on how rodents will out survive our species and further flourish on a post human Earth. When talking about the uniqueness of human culture we should drop the claim that we are better at insulating ourselves from natural selection than all other organisms.

In summary, there is a difference between human culture and culture in other species. No other species on Earth can share, store, and transform non genetic information to the extent that humans can. Our ability to share and manipulate large amounts of non genetic information has led to our extensive cumulative cultural evolution. Part and parcel of that cultural evolution are the distinctive tools and complex technologies of human societies. How, then, does the uniqueness of human culture relate to environmental preservation? Recall that for Callicott, Elliot, and Rolston, the distinctive features of human culture mark off what is wild and what should be protected in the environment, namely, those parts of the world outside of humans and their effects. Callicott, Elliot, and Rolston are correct that human culture is unique. But does that knowledge bring us any closer to knowing what are the candidates for environmental preservation? Do the distinctive features of human culture provide the grounds for determining what is wild and natural? These questions are the focus of the next section.

Unique human features vs. effects upon the environment

When drawing the distinction between what is natural and unnatural, between what to preserve and not to preserve, why divide the Tree of Life between humans and the rest of Life? There are other significant divisions on the Tree of Life. For example, there is the division between Animalia and other organisms. Animals do not photosynthesize, they obtain their energy from other sources, and they tend to be larger and more mobile than non animals. Then there is the division between sexually reproducing and asexually reproducing organisms. Humans are different from other organisms, but that observation is insufficient for deciding what parts of the world should be candidates for preservation. We could decide to preserve sexual organisms over asexual organisms on the grounds that sexual organisms are different. We need a further reason why the divide between humans and other organisms provides the foundation for deciding what to preserve in the environment.

Of course the environmental philosophy literature offers reasons why the human/non human divide is the significant one for determining what to preserve. Those reasons will sound familiar. Our difference is not merely phylogenetic, as between animals and the rest of the organic world. Our difference is

not merely biological, as between sexually and asexually reproducing organisms. We differ from the rest of the organic world because of our cultural features. For Rolston, human culture is the “antithesis of wilderness” (1991[1998], p. 371) and human culture causes humans to be “disjoined from nature” (1989, p. 141). For Elliot, such features show that humans have “transcended from the natural” (1997, p. 123). For Callicott, such differences do not make us unnatural, but they cause us to be significantly different.

Do we now have an adequate reason why the distinction between humans and the rest of the world is the distinction for determining what are the candidates for environmental preservation? Perhaps not. Let us distinguish two types of phenomena. First, there are the types of effects humans have upon the environment, such as causing mass extinction and other particularly destructive effects upon the environment. Second, there are the unique cultural features of humans, such as our complex technology. Let us designate these two as:

- (E) Particularly Destructive Effects Upon the Environment
- (U) Unique Features of Humans.

Many in environmental philosophy emphasize (U). The standard inference from (U) is that human’s unique culture makes us unnatural, and that human culture distinguishes us from what is wild and a candidate for preservation. More precisely, the common inference is from (U) to (P).

- (P) Those parts of the world outside of humans and human artifacts are the candidates for environmental preservation.

For example, when it comes to distinguishing natural from unnatural, Elliot writes:

[I]t is not the quantum of impact that is the basis for a useful and workable distinction between the natural and the non-natural. We should attend to the structure of the agency involved. Thus human agency is importantly different from other kinds of agency... Human agency involves an array of culture, social organization and highly structured economic arrangements and is exaggerated by technological capacities. (1997, p. 123)

According to Elliot, it is not our effect upon that world that makes us unnatural; our unique form of agency makes us unnatural. Furthermore, human agency is unique because of its distinctive cultural elements. Human culture, thus, causes humans to be unnatural and not wild.

Contrary to some in environmental philosophy, I would like to suggest that (E), not (U), is doing the work in determining what to preserve in the

environment. We make a prior decision concerning what we want to preserve, and in that decision we determine what effects upon the environment, human caused or otherwise, we wish to avoid. The concept of 'natural' and the distinction between humans and the rest of nature are irrelevant. More formally, citing a unique feature of humans is neither necessary nor sufficient for determining what to preserve.

Consider whether the existence of a unique human feature is necessary for deciding what to preserve. Suppose other organisms evolved such that they could cause mass extinctions akin to the mass extinctions attributed to humans. Imagine the evolution of a virus or bacteria that leads to the extinction of hundreds of thousands of species. If one believes that those threatened species should be protected from such destructive agents, then one is not using the distinction between humans and non humans to determine what should be protected. The distinctive feature of humans, our human cultural evolution, is not a necessary factor in determining the candidates for preservation. To reinforce this intuition, consider a less fictitious case. As mentioned earlier, between 5 and 23 mass extinctions have occurred since the Cambrian period. Those extinctions are often attributed to such abiotic events as meteor impact, climate change, or eruptions of noxious gases trapped below the Earth's crust. If the world is faced with the threat of another mass extinction caused by some abiotic condition, should we protect the environment? If the answer is yes, then there is nothing about the uniqueness of humans that is motivating what are the proper candidates for preservation. In such cases, there is a non human factor causing mass extinction. Facts about the uniqueness of human culture have no bearing on deciding what to preserve in the environment.

Let us turn to the question of whether citing the uniqueness of humans, say human culture, provides sufficient grounds for deciding what to preserve. In other words, let us ask whether (U) is sufficient for deciding what to preserve. Suppose in the future humans become more environmental-friendly and stop their practices that result in mass extinction. Suppose that those future humans still have a unique form of culture when compared to other organisms. Furthermore, suppose that those humans value biodiversity and there are no threats to Earth's biodiversity. In this situation, humans are distinct and there is no threat to what we value in the environment. If that is the case, then human uniqueness is not sufficient for deciding what to protect, because nothing in the environment is threatened. Humans are unique but that uniqueness is not relevant in deciding what to protect.

Stepping back, recall the argument concerning human culture described in the previous section. Humans are unique among terrestrial organisms in that we have cumulative cultural evolution. That evolution has allowed us to develop sophisticated and powerful technologies. It is then argued that the uniqueness of human cultural evolution provides the ground for asserting that humans and our artifacts are unnatural. The uniqueness of human culture is thought to provide the grounds for saying what is wild and what are the candidates for preservation, namely, organisms and entities outside of our

species. I have suggested that determining what to preserve turns on deciding which effects on the environment we wish to avoid. For example, we make a prior decision that we want to preserve biodiversity and thus to avoid mass extinction. That prior decision is not determined by whether humans are natural or if humans are unique. The overriding consideration here is what effects upon the environment we would like to avoid, not information about us.

What to preserve?

By way of summary, let us retrace our steps. Brennan and Katz suggest that what is outside the sphere of unnatural human acts is natural and a candidate for preservation. But with the help of Sober and Lewontin we saw that there are no biological grounds for asserting that some human actions are natural and others are unnatural. Alternatively, Taylor suggests that what is natural are those parts of the environment outside the sphere of human influence. Katz responds that human influence upon the world is so pervasive that there are no longer any unaffected environments. More pressing, we need to know what makes human's influence upon the world different from the influence of other biotic and abiotic factors. Callicott suggests that humans are unique because we cause an abnormal rate of mass extinction. But this proposal runs into problems of its own. We have not killed more species than other causes of mass extinction, nor are we causing mass extinction at a faster rate than past abiotic causes of mass extinction. Finally, Callicott, Rolston, and Elliot argue that human culture is unique, and such uniqueness provides the grounds for determining what to preserve in the environment. They are correct that human culture is unique. However, the fact that humans are different does not tell us what are the candidates for preservation.

What, then, are the proper grounds for deciding what to preserve in the environment? When deciding what to preserve we should not focus on questions concerning human uniqueness and what is natural. Those questions lead to dead ends. Instead we should focus on other types of questions. There are normative questions such as: What ought we preserve? Or, why ought we preserve this part of the environment? Then there are more descriptive questions: Given we know what we want to preserve, what is the best means for doing so? For example, suppose we make the normative decision that biodiversity ought to be preserved. Then we need to determine how to preserve biodiversity. That involves addressing such questions as: What is biodiversity? What are the units of biodiversity? What are the best ways to protect such units? Do we try to preserve species, or other types of taxonomic units? What about ecosystems? And so on. Notice that these questions do not hinge on deciding what is unique about humans or defining 'natural.' We have seen, for instance, that we can value biodiversity even if humans are not unique. Furthermore, discussions in the conservation literature concerning how to measure biodiversity do not turn on the notion of 'natural.'

The arguments in this paper should not cause any pessimism for those that want to protect those parts of the world that are outside of humans and our influence. We can still capture the desire to protect what is outside of us and what is seen as unsoiled by our species. Suppose that humans are not unique in the ways commonly cited by many environmental philosophers. We may still desire to preserve biodiversity because such diversity is instrumentally useful. Alternatively, we may still desire to preserve biodiversity because we believe it has intrinsic value. Human uniqueness is not on the table in either case: we can value biodiversity because it is valuable to us or because we think it has intrinsic value even though humans are not culturally distinct. Similarly, we can value biodiversity for those reasons even if the distinction between what is natural and unnatural is broken. In either case, we can still argue for protecting the environment without talk of human uniqueness and what is natural.

The morale of this paper, then, is this. In pressing debates over the environment, we should not get side tracked by the concept of ‘natural.’ In discussions concerning environmental preservation, we should not get bogged down by trying to determine what is different about us. Arguments over ‘natural’ and human uniqueness are at best a distraction when deciding what parts of the environment to preserve. At worse, such arguments cause harm because they delay us from formulating proper reasons for protecting the environment.

Acknowledgements

I would like to thank those that helped me write this paper. Brenda Baker, Megan Delehanty, Anya Plutynski, Kim Sterelny, and an anonymous referee provided valuable comments on earlier drafts. Clement Loo and Jennifer Runke were excellent research assistants. Audiences in Calgary, Salt Lake City, and Sydney provided helpful feedback. The Social Sciences and Humanities Research Council of Canada provided financial assistance.

References

- Avital E. and Jablonka E. 2000. *Animal Traditions: Behavioral Inheritance in Evolution*. Cambridge University Press, Cambridge.
- Aitken G.M. 1998. Extinction. *Biology and Philosophy* 13: 393–411.
- Brennan A. 1988. *Thinking About Nature: An Investigation of Nature, Value and Ecology for the Twenty-First Century*. The University of Georgia Press, Athens.
- Boyd R. and Silk J.B. 2000. *How Humans Evolved, Second Edition*. W.W. Norton & Company, New York.
- Callicott J.B. 1991[1998]. The Wilderness Idea Revisited: The Sustainable Development Alternative, *The Environmental Professional* 13: 235–247. Reprinted in: Callicott J.B. and Nelson M.P. (eds), *The Great New Wilderness Debate*. The University of Georgia Press. Athens, pp. 337–366.
- Callicott J.B. 1996a. Benevolent Symbiosis: The Philosophy of Conservation Reconstructed”. In: Callicott J.B. and da Rocha F.J.R. (eds), *Earth Summit Ethics: Toward a Reconstructive*

- Postmodern Philosophy of Environmental Education, State University of New York, Albany, pp. 139–160.
- Callicott J.B. 1996. Do Deconstructive Ecology and Sociobiology Undermine Leopold's Land Ethic?. *Environ. Ethics* 18: 353–372.
- Clark A. 1997. *Being There: Putting the Brain, Body and World Together Again*. MIT Press, Cambridge, MA.
- Dawkins R. 2004. *The Ancestor's Tale: A Pilgrimage to the Dawn of Life*. Weidenfeld and Nicolson, Wellington House.
- Elliot R. 1997. *Faking Nature*. Routledge, New York.
- Ehrlich P.R. 2000. *Human Natures: Genes, Cultures, and the Human Prospect*. Island Press, Washington, D.C.
- Gould S.J. 1989. *Wonderful Life: The Burgess Shale and the Nature of Natural History*. Norton, New York.
- Greenfield P. and Savage-Rambaugh K. 1990. Grammatical combination in *Pan Paniscus*: Processes of learning and invention in the evolution and development of language. In: Parker S. and Gibson K. (eds), "Language" and Intelligence in Monkeys and Apes. Cambridge University Press, Cambridge, pp. 540–578.
- Griffiths P.E. and Stotz K. 2000. How the Mind Grows: A Developmental Perspective on the Biology of Cognition. *Synthese* 122: 29–51.
- Hettinger N. and Throp B. 1999. Refocusing ecocentrism: de-emphasizing stability and defending wilderness. *Environ. Ethics* 21: 3–21.
- Katz E. 1997. The big lie: human restoration of nature. In: Katz E. (ed.), *Nature as Subject: Human Obligation and Natural Community*, MIT Press, Cambridge, pp. 93–107.
- Lewontin R.C. 1983[2001], Gene, organism and environment, In Bendall D.S. (ed.), *Evolution from Molecules to Men*. Cambridge University Press. Cambridge, pp. 273–285. Reprinted in: Oyama S., Griffiths P.E. and Gray R.D. (eds), *Cycles of Contingency: Developmental Systems and Evolution*. MIT Press. Cambridge, pp. 59–66.
- Mercader J., Panger M. and Boesch C. 2002. Excavation of chimpanzee stone tool site in the African rainforest. *Science* 296: 1452–1455.
- Norton B. 1986. Epilogue. In: Norton B.G. (ed.), *The Preservation of Species: The Value of Biological Diversity*, Princeton University Press, Princeton.
- Odling-Smee F., Laland K. and Feldman M. 2003. *Comments on Niche Construction: The Neglected Process in Evolution*. Princeton University Press, Princeton.
- Primack R. 1993. *Essentials of Conservation Biology*. Sinaur Associates, Sunderland, Mass.
- Ridley M. 1993. *Evolution*. Blackwell Scientific Publications, Cambridge.
- Rolston H. III 1989. *Philosophy Gone Wild*. Prometheus Books, Buffalo, NY.
- Rolston H. III 1991[1998]. The Wilderness Idea Reaffirmed, *Environmental Professional* 13: 371–378. Reprinted in: Callicott J.B and Nelson M.P. (eds), *The Great New Wilderness Debate*. Georgia University Press. Athens, pp. 367–386.
- Rolston H. III 1994. *Conserving Natural Value*. Columbia University Press, New York.
- Sober E. 1980. Evolution, Population Thinking, and Essentialism. *Philosophy of Science* 47: 350–383.
- Sober E. 1986. Philosophical problems for environmentalism. In: Norton B.G. (ed.), *The Preservation of Species: The Value of Biological Diversity*, Princeton University Press, Princeton.
- Sterelny K. 2003. *Thought in a Hostile World: The Evolution of Human Cognition*. Blackwell, Malden, MA.
- Tattersall I. 1998. *Becoming Human. Evolution and Human Uniqueness*. Harcourt Brace, New York.
- Taylor P.W. 1986. *Respect for Nature*. Princeton University Press, Princeton.
- Woods, M. forthcoming: *Rethinking Wilderness*. Broadview Press: Peterborough, ON.