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# Environmental Values in American Culture

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## Cultural Models of Nature

We begin our examination of how laypeople view environmental problems by describing the cultural models Americans use to understand nature and humanity's interaction with it<sup>1</sup>. The models of nature described here apply to any environmental problem, not just global ones, and subsequent chapters will demonstrate that these general models are the basic conceptual underpinning of popular American thinking about the environment. They are used to understand global environmental problems, they reenforce and justify environmental values, and they are the basis for reasoning that leads to preferences for some environmental policies over others.

When we began this study, we did not anticipate cultural models that would so broadly cover the ecosystem and humanity's relation to it. We were looking more specifically for models of global warming. However, following anthropological interviewing guidelines, we preceded our specific interview questions with general ones such as "*Would you say that protecting the environment is important? Why?*" and "*Would you say that you have environmental values?*"<sup>2</sup> These questions, as well as specific questions asked later in the interviews, were answered in ways that made sense only after we hypothesized the broad models about nature and humanity that we describe in this chapter. We support our inferences with quotations from those interviews, letting our informants speak in their own words, and with our survey results to illustrate the frequency of these models across the population.

This chapter covers three sets of general environmental models we discovered. First are models concerning nature as a limited resource

upon which humans rely. Second is the pivotal cultural model of nature as balanced and interdependent, with the derivative models of “chain reactions” that potentially can ripple across species, and of the unpredictability of such interdependencies. Third are the cultural models of society and nature: the market’s devaluation of nature, the separation from nature that leads to failure to appreciate it, and the American idealization of the environmentalism of primitive peoples. For the second and third sets of models, we compare the cultural models of laypeople with the models of scientists.

### Model of Human Reliance on a Limited World

The models described here involve the related ideas that humans are part of the environment and depend upon it, that the planet is limited in size, and that our wastes do not disappear but enter cycles and eventually return to us.

One of the most commonly expressed justifications for protecting the environment is that it is a fundamental basis for human life. For example:

[Protecting the environment is important] to a certain extent because we live in it. . . . We have to breathe it, we have to live with it . . . We’re mixed in with it.—Frank (building contractor, logger)

In the most survival-oriented form, human dependence on the environment is expressed as a health concern. For example, one person was worried about “breathing chemicals” from pollution, another noted difficulty breathing on days of poor air quality, and a third claimed that many diseases “probably originate from human-created problems with nature.” Using a metaphor from drug use, another person said that damaging the environment was “self-destructive, the same way that taking heroin is.”

Informants often used examples of pollution from nearby sources that could readily be seen. Several furthermore saw the entire planet as a closed system, as revealed in statements such as:

We’re all on wells here. . . . It’s common sense not to dump it [toxic paint waste] in the ground. . . . When you’re dumping it a hundred, two hundred feet from your well, that’s one thing. But when you’re pushing that in the ocean, you can

ignore it for a few years. . . . the whole issue is just one of time.—Nick (small manufacturing plant owner)

Similarly, Wilbur (a retired fireman) asks “How much can you dump? As big as the ocean is, it’s got to come back somehow.” Doug, a research scientist at a pharmaceutical firm, expresses the problem with a striking metaphor from his work.

One of the interesting stories I’ve always gone by is the simple bacteria, in a . . . colony. If you put a bacteria in a certain medium and let it grow, it starts building, but what happens—it starts creating waste, and as it starts growing and growing it starts making more waste and more waste. Well, eventually it ends up dying in its own waste. You know . . . if I can look at a simple bacterial colony as the way I look at the earth, I can actually see that possibly happening.—Doug (pharmaceutical scientist)

The frequency of such statements in the semistructured interviews suggested that this model is widespread, an inference supported by national probability samples. For example, 80 percent of a U.S. sample agreed with the statement “The earth is like a spaceship with only limited room and resources.” (Dunlap, Gallup, and Gallup 1993). Similarly, in a question testing the idea that earth’s ability to support humans is limited, 61 percent *disagreed* with the statement “The earth can support a much larger world population than exists today.” In response to a related question in a much earlier survey in Washington State (Dunlap and Van Liere 1978, 13), 96 percent agreed “Humans must live in harmony with nature in order to survive.” Although the results of our semistructured interviews might suggest some rewording of the questions used in those surveys, the probability samples of those surveys demonstrate the wide distribution of the cultural model that the earth is a closed system upon which humans depend.<sup>3</sup>

For many, the concept of dependence goes far beyond health to ideas that are expressed by using the metaphor of “home.” (These ideas are consistent with the derivation of the word *ecology*, from the Greek word for home.) Statements made in our interviews include “The environment is our home.” (Kate, college student), and “When you destroy your environment, it’s like burning down your home.” (Walt, retired machinist). One person expresses this more literally than metaphorically, saying that our planet is fragile and unique:

How many places do we have to go once we destroy this one, you know? I think it's kind of primary. . . . There's not many places to escape to. We have to deal with what we have here and do the best we can to protect it.—Jenny (social studies teacher)

These quotes reflect a reversal of the traditional view of home as a shelter from a vast and threatening nature. For whatever cultural reasons—whether the view of earth from the moon, increased public environmental awareness, or other factors—“home” has expanded to the environment or the entire planet.

Informants sometimes included humanity's dependence on the environment as involving psychosocial health, as well as physical health. Paige argues for preservation of green areas in the inner city.

Some things in the environment you just need, and if it's not there for your need, you're going to suffer. . . . you need to feel grass, to see the greenery out here, somehow you need it to keep this thing [points to head] going. You know, it's like a cement jungle. I mean, inner-city Trenton, they're crazy. I mean, if they've got one blade of grass in front of their house, they're doing good. . . . I think it makes them, you know, violent. . . . It's like a concrete jungle out there. And, I mean, it's not that it's a ghetto . . . they don't see anything pleasant, and therefore they're not going to be too pleasant themselves.—Paige (manufacturing worker)

A similar psychological need is cited by an elderly woman who has personally observed local loss of species due to housing development in her neighborhood: “You need birds around. You can hear ‘em singing, it makes you feel better” (Jane, retired insurance actuary).

Several statements in our survey support these models of human dependence on the environment. We cite just one statement here, which contrasted human dependence on the environment with dependence on the economy.

21 We should be more concerned about the environment than the economy because if the environment is all right we can at least survive, even if the economic system is not in good shape.

Earth First!	Sierra Club	Public	Dry cleaners	Sawmill workers
97	85	73	67	59

(Recall that the numbers are percentages agreeing with the statement in each survey group.) Agreement varies across the five survey groups in a predictable pattern. Nevertheless, majorities of all groups agree with

it, even those who have been economically hurt by environmental regulations.

In sum, there is a broadly shared recognition that humans fundamentally depend on the environment and that the earth is a closed system in which our effluents eventually return to us. The natural world is described metaphorically as a home and literally as a limited resource meeting physical and psychological human needs. One practical significance of this cultural model is that it provides a strong utilitarian motivation for protecting the environment—a motivation seen as common sense, almost precluding direct counterarguments.

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### Models of Nature as Interdependent, Balanced, and Unpredictable

In addition to the cultural model of nature as limited and humans as dependent on it, there is a subtler set of models about interactions within nature. As these emerged again and again from many parts of our interviews, we began to see them as among the most important and most central set of American cultural models of the environment. Three interrelated concepts are involved. First is a model that different parts of nature, for example, different species or ecological conditions, are so interdependent that changing one can have multiply linked chain reactions on a series of others. Second, these interdependencies are so complex that the interactions are impossible for humans to predict in advance. Third is a resulting proscription against human interference with nature. As we shall see, these ideas are related to ideas of species interdependency in scientific ecology, but their popular versions take on a modified form and are applied more broadly. A surprising result of our interviews was in finding a wide variety of people, across the range of educational levels, articulating these concepts. We suspect that they are more widespread among the general public than other scientific principles of comparable complexity.

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### Interdependencies and Chain Reactions

Most of our interviewees had a clear model of interdependencies in nature. They expect that perturbations, like removing or adding a species or changing climate, will cause other significant changes. Many infor-

mants refer to these interactions using the term *chain* or *chain reaction*, lay terminology that seems to derive both from the physics terminology for nuclear reactions and from the biological term *food chain*. The term *balance* is also used frequently in this context, presumably referring to a *balance of nature*.

Even though none of our questions asked about such interrelationships, informants mentioned them frequently in order to answer other questions, as in the following examples:

Warmer climate would lead into a rise in your sea level. And . . . that will lead into plant and animal extinction. . . . Life has a chain, and when they destroy insects, they destroy bird life, and destroying bird life destroys other life. That's a chain reaction, for all of that . . . from the smallest microscopic life [on up] . . .—Walt (retired machinist)

[If there are species extinctions] that would have a rippling effect. . . . These birds are destroyed, and they eat these insects, and insects proliferate, and more damage [occurs] a thousand miles away.—Charles (coal mine construction worker)

Occasionally, the model of species interdependency was explicitly tied to an existing balance of species.

[All animals] are here for a reason. They gotta be food for something. . . . If they're food for a certain animal, and they become extinct then [that animal] will try to get something else. . . . It'll unbalance everything. . . . Something happens, one dies, which makes something else die, which in turn makes something else die. [A species extinction] might cause a chain reaction.—Cindy (housewife)

Cindy's statement that all animals "are here for a reason" gives the interdependency of species a theological or teleological explanation. Others simply described the balance, stating the way they believed nature works.

Some informants consider the balance to be quite delicate. For example, an educated, politically active mine worker, Emma, reacted as follows to an interview question suggesting that we let climate change proceed and adapt to it rather than trying to prevent it:

Whoever thinks that has somehow escaped the logic of exponential change, that you can set off a chain reaction that just keeps getting bigger and bigger as it goes down through nature. Whoever says that sees changes as still kind of linear. You throw the ball and it's only going to go so far. And I think that is largely



the policy that is guiding our establishment right now. . . . And I think that it's foolhardy.—Emma (coal loading machine operator)

Emma's claim of "exponential change" would literally apply to the concept of chain reactions in physics, in which the effect (in that case, the number of nuclei giving off neutrons) becomes exponentially larger with each successive generation in the nuclear reaction.

Whereas nature is seen as fragile in the face of large perturbations such as species extinctions or climate change, it is seen as resilient to small changes, even having a self-healing capability.

We, all of us, have built our camps and so forth too near the water. We didn't realize. . . . We know now that things should be back so that the water can filter and clear. . . . It's too late to do too much about that, but we can look down the road and be sure that not anymore's done, see, because the earth healing itself can heal it up to a point, and then it's going to need help.—Catherine (retired science teacher, environmentalist)

The self-correcting model was also used to oppose the idea of deliberately trying to counteract one human change by creating an opposite one. In particular, this was mentioned in response to our interview's proposal to cool climate in order to neutralize the anthropogenic greenhouse effect.

If we tried to counteract that, we could be in an even worse situation. . . . [We should do] nothing by man other than reverse our habits, but not reverse what's happening. . . . Hold off on everything we've done to cause the greenhouse effect, and see if it can self-correct or see if we can live with the situation as it stands.—Kate (college student)

These quotations suggest a belief that nature will adjust to small changes, yet is vulnerable to large ones. The self-correcting component of the balance of nature cultural model seems limited: if perturbations are small, nature will right itself, but if they are too large it cannot.

The significance of this model of interdependencies and chain reactions is that it leads Americans to be conservative about changing nature, even parts of nature that are unimportant to us. In this sense it greatly extends the first model of a limited environment by making all aspects of that environment potentially relevant to humans. It leaves undefined which parts will in fact be relevant and how large a change will cause chain reactions.

### Interdependency of Nature Prescribes Nonintervention

Our interviews show that informants augment the belief that natural systems are complexly interrelated with the belief that humanity cannot understand these interrelationships fully. A widely held opinion that humans are unable to predict these interactions leads them to a prescription to avoid human disturbance. We call this linked set the *nonintervention model*.

For example, an informant reacts as follows to the interviewer's description of human-induced climate change:

[With global warming] everything will just get all out of whack. I think once you start mucking with something that big it will chain react through everything that we're used to in unpredictable ways.—Pervis (coal mine wireman)

When asked about the wisdom of using technology that could change climate for the better, James says we would probably “foul it up,” because that would be “fooling with nature,” and that it is “pretty tough for man to duplicate nature.” Both Pervis and James invoke the model of nature as interdependent and complex, which leads them to advise against human intervention.

A conservative congressional staff member elaborates this point further and links it to a similar tenet (apparently drawn from Karl Popper) of conservative social thought. He begins in response to our request to describe *the relationship between human society and nature*.

It seems that things happen for a reason. . . . It all seems so precise and calculated that . . . you want to go very lightly into a situation where you're going to be tampering too profoundly with the environment. . . . I'm a conservative, obviously, and one rule of thumb that conservatives live by is the law of unintended consequences: that if you try to engineer human behavior, things are going to happen that you never anticipated. And I think the same could be true of the environment.—Gerard (legislative counsel)

Another congressional staff member, although he is from the opposite end of the political spectrum, invokes the same model to argue against large-scale geoengineering to fix the greenhouse effect.

Some scientists are suggesting that you could put 500 tons of iron into the ocean to make algae bloom. The algae would soak up carbon. It's obviously bullshit. On the face of it, it's ridiculous. *Why?* You're already conducting one large experiment with global warming. Now they're suggesting conducting another large-scale experiment. Even if that solves the problem, they don't know what

the other ramifications are. It's offered as a panacea. That's Ronald Reagan thinking.—Alvin (legislative aide)

The quotes in this section show that the nonintervention model is based on a two-part model covering both the complexity of ecosystem interactions and the limits of human knowledge and prediction. This line of argument is not limited to highly educated professionals or linked to any particular political philosophy.

Although most informants in the semistructured interviews used a nonintervention model, two or three did not and generally expressed less concern about human impact on the environment. For example, Ronald feels that humans would know if the environment were seriously threatened and would act to avert any dangers.

I think that . . . the mind of man is superior to nature and that if man feels that he has extended nature or is threatened because of his overuse of nature, that . . . he has the capacity—spiritually, and mentally, and emotionally—to come up with some solution. I don't think he'll just engage in some sort of long-term suicide.—Ronald (resort proprietor)

A congressional staff member also rebuts the nonintervention model. He summarizes it concisely but seems to mistakenly believe that this model is limited to the “environmental community.”

See, the environmental community would never have ever considered as a resolution of the global warming issue, bioengineering the plankton to absorb the CO<sub>2</sub>. Okay. Because that is an active intervention. . . . I think the theory goes, or the thesis goes that we don't know enough about the environment to positively intervene to resolve issues. So that the best way to do it is to just leave it. And to try to leave the environment as it was without us there . . . the theoretical reason is that it's too complicated. The natural system is too complicated to replicate or to positively intervene in. . . . We don't know enough. We'll never know enough. It should not be done.—Luke (congressional staff)

When asked for his own position, Luke goes on to criticize the nonintervention model.

My position is, that, in fact, we probably are going to make this transition to the point at which it would be almost impossible . . . without positive intervention. . . . Let's say everybody [in the world] is at the same level of economic development that we are, and consuming anywhere near, and emitting anywhere near what we do right now. The concept of just sort of letting natural forces handle it would be very, very difficult to do, given that type of situation. So you actually have to actively go and try to do it.—Luke (congressional staff)

Whether right or wrong, Luke and Ronald were very unusual among our informants in thinking that humanity could actively manage nature.

Paralleling the fragility-in-the-large, resilience-in-the-small concept of nature, the nonintervention model seems dependent on several factors: the scale of the change, its unpredictability, and its uncontrollability or irreversibility. The five informants who discuss hunting all believe that animal populations can be managed, or limited, in a predictable way by socially regulated human intervention (hunting, in particular). Usually this is seen as good for the animals, to prevent overpopulation and consequent starvation, disease, and unpleasant death.

I think you have to have a balance [in the animal population]. If you don't you can get an overabundance of them. So there again, you've got to equalize, try to keep it within a safe number . . . take a certain amount you kill and make sure there's [a] certain amount that are living. . . . To me, life all the way through has to be an equal situation. You make sure that you have enough supply for years to come and yet enough for . . . the present.—James (farmer, custodian)

I get awfully upset to think there's a moose hunt because they're nothing but just like tame cattle. But they say there's so many of them that if they aren't killed and eaten . . . then they're going to get diseased, and they're going to die. . . . A controlled atmosphere is right. I think of control to be sure to take care of the animals. [If] there's too many or if they're diseased or something, they should be weeded out.—Catherine (retired science teacher, environmentalist)

These informants who advocate hunting to control population do not advocate human manipulation of nature in general. James, for example, was quoted earlier advising against “fooling with nature.” Instead, the hunting examples seem to be interventions considered small enough or limited enough that they can be predicted and controlled successfully by humans.<sup>4</sup> A similar exception must be applied to an intervention like agriculture, which massively changes nature but does not seem to generate concerns about interdependencies. (Cronon (1991) suggests that human disturbances such as agriculture and mining become so familiar that they seem more like second nature than human disturbance).

Only a couple of informants qualified the nonintervention model, saying that other things, such as economic well-being, are as important to humans as the relationship with nature. Gerard, for instance, said that environmentalists were saying “don't develop,” but that they should

understand that other countries want to grow the way the United States has. Ronald made an argument for fairness very similar to that of Tucker (1982).

I'm not sure that I would agree with those that simply say we should leave . . . vast tracts of wilderness. I don't [think] that we should leave these in as pristine a state as we can in order for a few hikers to go through them occasionally, you know, and take pictures of them, and get a big thrill. I don't quite understand that. I mean, it might be very nice to leave vast tracts of the environment untouched or relatively untouched on the face of this earth, but basically it doesn't make sense if it's just going to be for the benefit of a few people.— Ronald (resort proprietor)

This statement implies that the primary goal of wilderness conservation is human benefit. We will discuss this and opposing views in the chapter on values.

In short, the nonintervention model holds that nature is interdependent, that its relationships are so complex as to be unpredictable, and that therefore human modifications are unsafe. Based on these findings from the semistructured interviews, we added related questions to our fixed-form survey. The survey results confirm that these models are broadly shared and fill in some of their elements.

105 Nature has complex interdependencies. Any human meddling will cause a chain reaction with unanticipated effects.

Earth First!	Sierra Club	Public	Dry cleaners	Sawmill workers
97	89	77	76	63

109 Nature may be resilient, but it can only absorb so much damage.

Earth First!	Sierra Club	Public	Dry cleaners	Sawmill workers
94	93	97	93	85

Agreement dropped precipitously when the resilience argument was used to justify a lower level of environmental protection. Even when we use loaded language ("radical measures"), no group came even close to majority agreement.

29 The environment may have been abused, but it has tremendous recuperative powers. The radical measures being taken to protect the environment are not necessary and will cause too much economic harm.

Earth First!	Sierra Club	Public	Dry cleaners	Sawmill workers
0	7	23	17	33

The survey also makes it clear that this principle of minimizing human intervention is broadly applied to global climate change.

57 Global climate change would disturb the whole chain of life.

Earth First!	Sierra Club	Public	Dry cleaners	Sawmill workers
100	85	93	90	81

126 Global climate change would be bad even if it didn't cause humans any harm, because it is not a natural change.

Earth First!	Sierra Club	Public	Dry cleaners	Sawmill workers
94	74	87	83	67

Although there is majority agreement across groups, these questions also reveal patterns of variation across the spectrum and occasional blips up or down. These patterns of agreement and disagreement across groups are analyzed systematically in chapter 8.

As mentioned in chapter 2, most surveys have not addressed any of these questions. One survey that does (Dunlap, Gallup, and Gallup 1993) found that 87 percent of a U.S. national sample agreed that "The balance of nature is very delicate and easily upset." Another of their questions touched on part of the nonintervention model, although it unfortunately did not specify complexity and unpredictability as causes: 66 percent of the U.S. sample disagreed with the statement "Modifying the environment for human use seldom causes serious problems." In short, our own survey, as well as the limited national polling that exists on this topic, support our inferences of the cultural model of complex interdependencies, unpredictability, and the prescription of nonintervention.<sup>5</sup>

### **Cultural Models versus Scientists' Models of Ecology**

How does the cultural model of interdependencies and unpredictability relate to that of scientists? We compare our lay informants' cultural models to those of ecologists, that is, scientists who study ecosystems. As we compare the two, we recall the example of Tukano beliefs about fish spirits, a cultural model vastly different from a scientific one, yet a model that guides people to manage their environment effectively.

Most ecologists would add substantial qualifications to the cultural model. For example, they are uncomfortable with an emphasis on a balance of nature, they qualify our informants' model of fragile inter-

dependency and unpredictability, and they do not use the term *chain reactions*. We show in this section how the cultural models differ from the ecologists' models, then argue that the cultural models in this area—unlike some models discussed in the next chapter—are nevertheless reasonable simplifications.

It could be argued that the American cultural model of balance of nature draws from an older scientific ecology that is now in disfavor. The lay cultural model of the balance of nature parallels ideas developed by early ecological science: a stable climax stage of ecosystems (Clements 1916, cited in Worster 1977) and homeostasis, equilibrium and balanced ecosystems (e.g., Odum 1969). However, since the seventies ecological studies influenced by population biology have often found continuous disturbances of populations rather than stable equilibrium, even in areas not affected by humans (Pickett and White 1985). Most studies find that populations of coexisting species can vary erratically, not around a steady mean, and a few studies have found large and unpredictable fluctuations (May 1976).

Does this mean the cultural model is wrong? Addressing the balance part of the cultural model, environmental historian Donald Worster (1990) argues that, even if nature is more unpredictable and turbulent than suggested by a balance of nature, modern human disturbances are nevertheless far more destructive than most natural fluctuations. Our background chapter reviewed estimates that the normal rate of natural species extinctions is less than one per year, but with human impacts, today's rate is more than four thousand species extinctions per year. In other words, it may be reasonable for the cultural model to qualitatively distinguish the high level of disturbance by humans from a relative balance in ecosystems lacking humans.

The cultural model of chain reactions also corresponds imperfectly to scientific ecology. Ecologists find that most organisms, in most ecosystems, exhibit substantial functional redundancy (O'Neill et al. 1986). One extreme example of redundancy is the thousands of species of microorganisms in the forest floor that decompose plant matter. Even if a large fraction of these species were wiped out, the remainder would quickly take their places. Since precisely the same functions would be

filled, other species that depend on them would be unaffected. In measures of energy and mass flow, there would be no change. Even the dominant species in an ecosystem can be functionally redundant. For example, chestnut was the dominant tree species in large areas of the U.S. eastern woodlands. When it was wiped out by chestnut blight from 1906 to 1940, it was replaced by approximately twenty other tree species (Shugart and West 1977).

However, ecological science does provide some examples of just the types of chain reactions mentioned by our informants—although scientific ecology does not use that term. In a classic study of a Washington State tidal area, experimentally removing a single species—starfish—caused the number of barnacle, mussel, limpet, and chiton species to drop from fifteen to eight (Paine 1966). Moving a new species into an area to which it is not native can also have dramatic effects on native species. In a Hawaiian study of the invasion of a new tree species (*Myrica faya*) in volcanic areas, this single new species changed the characteristics of the entire ecosystem (Vitousek and Walker 1989).

We will call cases like soil microorganisms and chestnut *functional redundancy*, and cases like starfish and the susceptibility of the Hawaiian system prior to invasion *fragile interdependence*. If one were to count species, those with functional redundancy would far outnumber those with fragile interdependence. There are principles by which an ecologist can predict ecosystem relationships of fragile interdependence, but these predictions are sometimes wrong. Another factor involves the perspectives of different ecologists: those who look at the flows of mass and energy see ecosystems as very stable, even as species change. Those working in population biology see that such changes can cause loss of individual species and consider ecosystems as more fragile.

In short, ecologists would disagree that all species interrelationships are fragile interdependence. In fact, most are not. They would disagree with the cultural model that such relationships are so complex as to be totally unpredictable, while acknowledging that their predictions sometimes fail. On the other hand, when they look beyond their experimental study plots, most ecologists worry about humanity's cumulative effects of reducing the number and diversity of species, which in the long run



reduces the amount of functional redundancy available and thus reduces the ability of an ecosystem to withstand stress or change.

So, for both fragile interdependence and unpredictability, the layperson's cultural model does not quite correspond to the ecologists'. The question that must be asked is, are these cultural models more like the Tukano case, managing effectively with what might seem like an incorrect model? Or, as has been found in some educational contexts, do incorrectly applied models simply mislead and waste effort?

In all three areas—balance of nature, fragile interdependence, and unpredictability—the American cultural model has selected one of several appropriate specific models from the scientific community. The cultural model incorporates stable equilibrium over continuous disturbance, fragile interdependency over functional redundancy, and chaotic unpredictability over predictable regularities. These three specific models fit together consistently—together, they comprise a more general multipart model of the dynamics of natural systems and limits to human control. In each of the three specific models, the alternative selected is a conservative one, as is the overall multipart model. That is, ecological science cannot consistently predict which changes will cause chain reactions and which will not. Thus one could justify the nonintervention model as a reasonable simplification because human disturbances are in fact risky, even if dire results are infrequent.

### **Models of the Causes of Environmental Concern**

A final set of cultural models about nature that emerges from our interviews concerns the factors determining why other people care about nature. We have no questions asking about this topic on the semistructured interview, but it is raised as informants discuss other topics. The factors they cite include the devaluation of nature by modern economic and social systems, a lack of contact with nature leading to a lack of concern, and the value primitive peoples are thought to place on the environment. These models are important because they are invoked to understand the causes of differences of opinion in environmental debates and because they provide clues about people's own expectations and values regarding concern for nature.

### Materialism and the Market System Devalue Nature

In the semistructured interviews, several informants complained that our society fosters excessive consumption and display of wealth to the exclusion of more important values.

The fact that we are so materialistic proves that we haven't done everything right. Money is the god that we are going by, and that can't be the right god. Our god has got to be the environment, and the people, and the world.—Catherine (retired science teacher, environmentalist)

A related idea is that nature is valuable even though it is free, and that human economic exchange falsely devalues nature because it has no market price.

These things that we have out there [the natural world] that God has developed for us are here for our enjoyment and, you know, it's free. That's one thing I think has happened to a lot of people in our society today. They've gone so materialistic they've passed right by what is out there that we can have for free.—James (farmer, custodian)

Not everything does have a price. . . . Most living organisms are looked upon as extractable commodities rather than having an intrinsic right to exist. We have so devalued anything but our very narrow commoditization of so much of the planet.—Mark (legislative aide)

We did not ask specifically about these topics in the semistructured interviews. Nevertheless, since several informants raised them, we included them in the subsequent survey, using the following questions:

4 If people only think of making a profit, they won't really see the beauty that nature has to offer.

Earth First!	Sierra Club	Public	Dry cleaners	Sawmill workers
100	78	86	87	69

53 The present relationship between humans and nature is one of domination rather than partnership. We look at most living organisms as extractable commodities.

Earth First!	Sierra Club	Public	Dry cleaners	Sawmill workers
100	82	90	87	81

119 Capitalism may be the best system we know of today, but a fundamental problem with it is that it doesn't give any value to things you can't buy and sell, like the environment.

Earth First!	Sierra Club	Public	Dry cleaners	Sawmill workers
80	82	90	83	63

The survey results showed wide acceptance of the ideas that profit-seeking individuals, and our economic system more broadly, were at odds with environmental protection. As we discuss in a later chapter on policy, Americans correspondingly expect a reduction in level consumption in the future, and feel that a “less materialistic way of life” will help the environment.

### **Alienation and Lack of Contact with Nature**

The second explanation our informants give for lack of environmental concern was infrequent contact with nature. There is a greater diversity of opinion on this belief than on the prior explanation of the economic system, and, in the semistructured interviews, it was raised by only four of our six environmentalists, not by other informants. Those raising this point assert that modern people are seldom in contact with the natural world and therefore do not appreciate it. They say that this lack of appreciation for nature leads to a lack of respect and little concern over environmental issues on the part of many people.

I think the majority of humans are completely alienated from nature. They don't have contact with nature. They spend their time indoors, and when they're outdoors, nature's an inconvenience to them. It makes them dirty, it bites them. Here everything's so cleaned up, everything's so tame.—Margaret (activist, environmentalist)

Just think of the people in cities. You think of Wall Street. . . . How much nature, how much environment do they get except going from one place to another in a car, and in a house, and then television, and bed, and again the next day, over and over. No, our country has changed. . . . at one time we all were as one with nature, but you aren't anymore.—Catherine (retired science teacher, environmentalist)

One person expresses the opposite position. Peter, a third-generation logger in rural Maine, feels that immersion in nature can make people take it for granted. While remarking that he thinks people are “more in tune with nature” than they were several years ago, he says:

I think up in this area people have a real tendency to take nature for granted. Living up here where we do, you're right in the woods basically, compared to somebody that's here from New York or Boston. They get out into the woods, which is a little different atmosphere for them, and they seem to really appreciate it.—Peter (logging contractor)

Elaborating this model further, Margaret proposes different levels of environmental awareness, citing examples from her experiences with residents of Pennsylvania and New Jersey. People can have an aesthetic appreciation for nature without being environmentally conscious, she asserts. They can be very concerned with the number of old-growth trees on their own properties, yet be completely unconcerned that a county garbage incinerator several hundred miles away is polluting the air they breathe. Some people, Margaret argues, are appreciative of the natural world but ignorant of the intricacies of its workings. Margaret takes her four children on extended trips away from their home near Philadelphia to land she owns in the woods of western Pennsylvania. Her purpose is to foster in them what she calls a “Zen awareness” that she believes comes from living in an undeveloped area.

In part because we did not ask about it in the semistructured interviews, only environmentalists volunteered that outdoor contact increased environmentalism. However, when we asked about such matters explicitly in the survey, majorities of most groups agreed.

3 If you don't appreciate the beauty of nature, then you may not be as environmentally concerned.

Earth First!	Sierra Club	Public	Dry cleaners	Sawmill workers
83	59	73	70	44

79 The majority of people are completely cut off from nature. They spend their time indoors, and when they're outdoors, nature is just an inconvenience to them.

Earth First!	Sierra Club	Public	Dry cleaners	Sawmill workers
97	56	57	47	56

Is this cultural model consistent with sociological findings? Only a few studies have investigated the relationship of outdoor contact with environmental sentiment, some finding a statistically significant but weak relationship (for example, Langenau et al. 1984). Anecdotally, several key figures in the American conservation movement, such as John Muir and Aldo Leopold, gave compelling but retrospective accounts of specific outdoor experiences that converted them to conservation advocacy. However, neither the studies nor the conservationist's autobiographies distinguish which came first—the environmentalist leanings or the outdoor experience.

## Societies with Minimal Environmental Impact

So far, we have described the beliefs that the capitalist system devalues the environment and that most members of this society are alienated from nature. These beliefs have led some of our interviewees to make comparisons of contemporary American society with societies that are believed to have less impact on the environment. A few informants cite less-developed societies as positive models of how to treat the environment. Their examples are drawn from earlier periods in American history as well as tribal societies. This harking back to former times is not the “good old days” nostalgia of the aged, as the majority of informants who specifically mention a need for bygone values are under fifty. They do, nevertheless, often idealize those bygone times.

If we lived like we did a hundred years ago, we wouldn't have nearly the pollution now that we do. . . . [go back to] the old values . . . When I was a kid, you didn't have a wastebasket full of garbage in a month. Now you have one every day.—Bert (resort proprietor, hunting guide)

We could just shut down everything and start going back to . . . colonial times where everything was . . . a much slower pace. . . . We think we're getting so much knowledge, and we're advancing so much, but yet we really are not in control of it. We're actually doing more damage to things that probably will never be able to be [repaired.] . . . In a simpler society . . . you're not stressed out, you're not in a rat race. You take care of yourself, but also you take care of your friends and neighbors and [have] more community.—Doug (pharmaceutical scientist)

A few informants, including three of the environmentalists, brought up Native American cultures or other small-scale societies as a model of societies with minimal environmental impact. Marge cites a contemporary indigenous group in the Philippines who have “lived for thousands of years totally in balance with their environment,” and Margaret cites “the Indian model of not making decisions without considering the seventh generation [to come]”.<sup>6</sup> Abby also refers to “native peoples.”

I think there was a certain balance in the very beginning. . . . If we want to try to get back to that, we should study the way native peoples have lived. There are some native people where we have the histories of them, and we can study and see how they did it and all. Almost always when we study native people who didn't leave big scars where they lived, who you could say were in balance, you almost always see that they had this great understanding, sort of an intuitive understanding of what they did. They never took too much, and they never

wiped out a certain animal that they liked to eat because they always wanted some more there. . . . And they weren't worrying about the bottom line and making money or, you know, exploiting that to its  $n^{\text{th}}$  degree because they were concerned about their future. . . . I wonder whether we've become spiritually depleted . . . as a society because we don't seem to think about the future.—  
Abby (shop owner, environmentalist)

These quotes combine folk history and folk anthropology with social criticism.

Our survey shows that the view of small-scale societies as environmentally sensitive is widely shared. About three-quarters of the public accept it.

118 Before Columbus came to this continent, the Indians were completely in balance with their environment. They depended on it, respected it, and didn't alter it.

Earth First!	Sierra Club	Public	Dry cleaners	Sawmill workers
58	78	77	80	69

One way to interpret this belief is that it is a statement about which direction American society should be moving. In this case, it would be related to the high acceptance noted earlier of a return to “traditional values and a less materialistic way of life.” Nevertheless, this does not mean that Americans want to literally return to an earlier era, as shown by lack of agreement with the following statement:

15 We're advancing so fast and are so out of control that we should just shut down and go back to the way it was in colonial times.

Earth First!	Sierra Club	Public	Dry cleaners	Sawmill workers
42	11	14	10	22

The symbolic appeal of the environmentally sensitive “primitive” is understandable. Such peoples are seen as close to nature, unspoiled and uncorrupted, much like wilderness itself. A specific example of the rapid acceptance of a myth about the environmentally sensitive Native American is the case of the Squamish man commonly known as Chief Seattle. A speech on environmental sensibilities has been widely attributed to him. While he did give a moving speech in 1854 about the intrusion of whites into Native American life, the environmental remarks widely attributed to him were in fact written in 1971 by a screenwriter, Ted Perry, and attributed to Chief Seattle in a film production (Egan 1992).

Nevertheless, the myth has spread quickly and widely. "It's a classic case of a lie going 20 miles an hour when truth is just putting on its boots" (historian Davis Buerge, cited in Egan 1992). Anthropologists might interpret the rapid spread of this myth as indicating what people want to believe and what they seek confirmation of.<sup>7</sup>

As anthropologists, we would agree that many societies with simple technology and low population density are in long-term balance with their environments. Nevertheless, some traditional societies have caused serious environmental damage, often undermining their own resource base. For example, Polynesians in New Zealand hunted the moas (a large flightless bird) to extinction over a 500-year span (Anderson 1990). Easter Island was deforested by its inhabitants over an 1100-year period, driving several tree species to extinction and reducing the carrying capacity of the island below the needs of its human population. The result was chronic warfare, cannibalism, and massive social breakdown (Diamond 1986).<sup>8</sup> Even societies that appear to be sustainable may only be using up their ecological support at a very slow pace (Edgerton 1992). Further examples can be found in Crosby (1986, 15) and Burch (1971). Many of these examples are somewhat larger scale hierarchical societies, or involve destruction occurring after human populations moved to new islands or new continents, or are a reaction to changes wrought by contact with Western societies.

In many other cases, traditional societies do have social structures and beliefs that support sustainable resource use (Nietschmann 1984; Rappaport 1968; Guha 1990), even though these beliefs are expressed in terms of kinship or deities rather than ecology. One explanation of small-scale societies as environmentally sensitive is a social-evolutionary one—the cultures encouraging sustainable resource use are those that have survived intact, and are thus the ones we see today, even if they did not consciously create their proenvironmental practices, beliefs, and social structures (West and Brechin 1991, 90).

In short, the lesson we take from small-scale societies is different from that of our informants, although perhaps both views would lead to the same recommendations. Our informants tend to see earlier societies as environmentally good and ours as bad. We would say instead that some societies have established long-term sustainable use of their environments

while others have not. Both the empirical evidence and simple logic tell us that the societies that have not yet done so—including our own—must eventually either change their uses of the environment or destroy themselves.

### Origins of Cultural Models of Nature

We can only speculate about the origins of the cultural models of nature described in this chapter. Many trace the historical origins of the broader trend of environmentalism to the conservation movement in the mid-nineteenth century and writers such as Thoreau, Audubon, Marsh, and Muir (Paehlke 1989). We suspect that the more specific models we document here have become widespread among the public more recently, because they seem to be at odds with this society's predominant literary and religious traditions (e.g., White 1967). One view is that these cultural models ultimately derive from scientific studies of biology, although they take on forms different from the scientific models (Oates 1989, 5, 31). Since few laypeople read scientific studies, there must be more immediate channels. Paehlke sees the writings of Carson and others in the sixties and seventies as bringing some of these ideas to a broad public. Even broader channels include public education, media reports, discussions with friends, and interpreting the stories of others.

Take for example the species interdependency model. It may be derived from school biology as well as the writings of popularly read environmentalists. Environmentalist writings on natural interdependencies date back at least to John Muir's (1911) observation, "When we try to pick out anything by itself, we find it hitched to everything else in the universe."

More recent examples range from the writing of Rachel Carson (1962) to the newsletters of today's environmental groups. The promulgation of these cultural models might be promoted by environmental advocacy organizations, whose agenda they support (Buttel and Taylor 1992, 221). Also, in environmental coverage in the news media, we note from casual personal observation that a common theme is that one human-caused change has other, unexpected consequences for other species.



One way in which these models are surely used is to make sense of reports and stories from others. These models are in turn passed to children, who now seem to be exposed to them at an early age. For example, consider a popular author for children from preschool up, Theodor Seuss Geisel, who wrote under the pen name Dr. Seuss. One of his stories concerns a mythical figure, the Lorax, who tries to stop a factory from cutting down trees and polluting. Part of this story's message illustrates interdependencies in nature, like those that emerged in our interviews. For example, one of several interdependencies in the short story was that brown Bar-ba-loots (bearlike creatures) depend on the Truffula trees.

He snapped, "I'm the Lorax who speaks for the trees which you seem to be chopping as fast as you please. But I'm *also* in charge of the Brown Bar-ba-loots who played in the shade in their Bar-ba-loot suits and happily lived, eating Truffula Fruits.

"NOW . . . thanks to your hacking my trees to the ground, there's not enough Truffula Fruit to go 'round.

. . .

"They loved living here. But I can't let them stay. They'll have to find food. And I hope that they may. Good luck, boys," he cried. And he sent them away.

(Geisel 1971)

Understanding this story requires a cultural model of interdependency, and the story may help the reader to develop such a model if it is not already present. In recent years, environmental themes have appeared frequently in children's and adolescents' stories. The Dr. Seuss example shows that such stories have been in circulation over twenty years, and that even preschool children are expected to possess (or be able to construct) the cultural model of species interdependency.

We cannot sort out the relative timing or relative import of sources such as the popular writing of scientists, schooling, news reports, environmental advocacy organizations, personal conversations, interpretation of environmental stories, and others. Nevertheless, the current pervasiveness of stories that require these models for comprehension demonstrates—as do our surveys—that the cultural models of nature discussed in this chapter are widespread and thoroughly integrated into American culture.

## Conclusion

This chapter has presented our findings that Americans possess general models of interrelationships in nature and humans' relation to nature. These models make possible elaborate inferences about environmental issues. We have documented at several points the way in which these cultural models selectively pick from scientific findings, sometimes ignoring those scientific models that would be contradictory. In the case of scientific ecology, the cultural models selected tend to be conservative, that is, the selected models provide a folk-theoretical rationale for opposing large human changes of the environment.

The correspondence of American cultural models with the findings of biology and social science is less important than the function of the cultural models in their social context. The opening of this chapter noted that we did not initially anticipate or explicitly elicit these models. Informants appealed to them in order to answer our fundamental questions, such as why they thought that protecting the environment was important, or how they could justify their environmental values. The findings described in this chapter, we will show as the book progresses, are nothing less than this culture's conceptual basis for environmentalism.