

## The Meaning of “Value” in Biodiversity

by Loren Wilkinson

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The late American poet Denise Levertov wrote a short poem just before the Rio Earth Summit in 1992. called, “The Batterers”. It paints the stark picture of a man sitting by the bed of a woman he has beaten, trying vainly to fix her wounds, to stop the flow of blood. The man has discovered, almost too late, that he does indeed love her:

*He is terrified.  
Why has he never  
seen, before, what she was?*

Then Levertov moves quickly to the point of the brutal picture:

*Earth, can we not love you  
unless we believe the end is near?  
Believe in your life  
unless we think you dying?!*

The analogy, though painful, will be good to keep in mind as we begin this consideration of “valuing” the diversity of non-human life which we have so long taken for granted, and which we have thus deliberately or not, “battered.”

What does the phrase “the value of biodiversity” mean? Let us look briefly at the words themselves. “Biodiversity” is a very new word, used for the first time barely a decade ago. The word first appeared in the *Biological Abstracts* database in 1988, with four references. By April, 1994, the number had escalated to 888.

“Value”, on the other hand, is a very old word--recently made to carry a whole new weight of meaning.. Probably there is more talk of “values” today than at any time in the word’s long history. At the same time, there is growing concern that “values” are being eroded in our culture. “Values” language itself is sometimes blamed for that erosion. “Values education” has become an important activity in post-modern culture (at least in North America), and people are encouraged to identify their own values, and live by them. This might at first seem encouraging to a person concerned about the loss of values, till we realize that (for example) Hitler too was, presumably, living by his values. The result of all this values-talk has been a proliferation of values: a kind of value-diversity, which matches a widespread affirmation for “pluralism” in

every area. This affirmation of pluralism accompanies a post-modern suspicion of any single framework which would mediate among values, classifying some as “better” or “higher” than others. The French deconstructionist philosopher Jean-Francois Lyotard expressed the mood of this post-modern time as “an incredulity towards all meta-narratives”--all large stories (whether religious, political, economic or scientific) which attempt to provide a framework for values beyond the private and personal.

The inevitable result is a de-valuing of the very idea of value. Thus we must ask whether a world of diverse values allows us to speak of *the* value of biodiversity. The word *the* implies some larger framework. If we say “a value” or (more in keeping with the mood of the time) “my value” then we have effectively undercut our ability to speak meaningfully of *the* value of anything, including biodiversity.

If we are in fact to speak of *the* value of biodiversity, we must (despite our current “incredulity towards all meta-narratives”) be able to affirm a larger framework in which value can have some meaning. I would like to outline five such frameworks--two pragmatic, and three religious--in which “the value of biodiversity” has been affirmed. I intend no extended critique of these frameworks--but neither do I pretend to present them neutrally. On the whole, I am presenting them, within each category (the pragmatic and the religious) in what I regard to be an ascending order of adequacy.

In conclusion, I would like to return to the question of whether biodiversity can have value in a world of value-diversity--and will do so by a brief consideration of the work of a man whose name is closely connected with the concept of biodiversity, the biologist E.O. Wilson.

### **Pragmatic Valuing: Economic**

We begin with the strictly pragmatic-- understood in economic terms. Our overarching topic today is “Bio-diversity: is it worth more than money?” The question assumes the centrality of economic valuation within the market system. I must deal with this framework a bit more extensively than the rest, because it is so dominant that for some, to ask whether biodiversity is “worth more than money” is an oxymoron suggesting the response: What other kind of value could there be?” Indeed, the late-modern triumph of a global market, transcending all other ideologies, seems to provide the one encompassing environment in which “values language” must proliferate. So long as we do not interfere with the freedom of others to pursue their private values in the global marketplace we can, so it is said, applaud a plurality of values. For the one value we all agree to live by is market value.

Biodiversity only has “value” in a market economy if it is something people are willing to pay for. Some living things are the source of goods or even (in a sense) services which human beings are willing to pay for: They can be bought and sold. A very great range of things and creatures which can be “valued” come under this kind of economic utilitarianism: many plants and animals, obviously, because we eat them. This has been the case throughout human history.

Less obviously, roughly half of modern medicines have their origin in substances and properties of wild plants and animals (often first noticed by aboriginal populations whose cultures are themselves part of the diversity threatened by the modern world.) Increasingly, living things have come to be valued as a library of genetic material which may have immense value in the future. This recognition has been matched by attempts to regard genetic information as property. Many poorer countries are trying to claim ownership of the genetic diversity of the plants and animals which grow within their borders. On the other hand, large seed companies, such as Monsanto, have attempted to protect the genetic material of their property through such techniques as “terminator genes” which keep seeds from reproducing beyond one generation.

In any case, given the enormous potential value of genetic material, there are strong economic reasons to keep the largest store of living things available, for they might well become economically valuable at sometime in the future.

Even the more obviously “aesthetic” values of an undisturbed biota--as it is preserved, for example in wilderness parks--can be defended on strictly economic grounds. The west coast of Canada is the location of the largest remaining temperate rain forests. They are not nearly so species-rich as the tropical rain forests--but the sheer amount of biomass per unit of area is greater than anywhere on the planet, that tonnage of living matter supported by a network of diverse soil life which we are now only beginning to understand. Yet almost all the arguments for the preservation of a few large tracts of undisturbed forest turn on their value in supporting an ever-growing flood of “eco-tourism”. As automation and a dwindling resource base of old-growth logs puts formerly forestry-dependent people out of work, it is undeniably true that tourist dollars may provide more “value” than lumbering. But whether they are valued for lumber, fibre, or spiritual refreshment, their fate of the forest is still being determined almost entirely by the willingness of some people to pay for those goods.

The attempt to deal with environmental problems on the basis of economic value alone has been most rigorously developed by a school of economics which flourishes in the American West, but which regards Margaret Thatcher, the apostle of privatization, as one of its patron saints. Economists who argue this way make the hard-to-answer case that it is common property resources which are most severely mis-used. (They are fond of Garret Hardin’s seminal article, “The Tragedy of the Commons” which deals with the way in which common grazing areas were usually ruined when cattle owners realized that when they added new cattle they would reap all the benefit of the added animals, while the decline in carrying capacity would be spread among all of the other owners) “What’s everybody’s business”, they say, “is nobody’s business.” Consequently when there is no clear private ownership, there is no one to insist (through the courts, if necessary) on the proper value of the land and its life. (And in the Canadian West over 90% of the land is public land Are there problems with oil spills? That, say these economists, is because the seas have been treated as common property. If ownership of the seas were held by corporations or individuals, then it would quickly be made illegal to transport oil through them in under-powered, single-hulled tankers. To those who say that such an idea is absurd, the economists answer that the idea of private property in the vast lands of the American west was similarly absurd till the invention of barbed wire. Laser and electronic technology give us today

the ability to “fence” the oceans, and may even give us the ability to “own” its life. I have indeed seen the privatization argument applied to whaling. If the whales were “owned”, then they would never have been ruthlessly hunted. Listen to Walter Block, a Canadian free-market economist with the Fraser Institute a Canadian organization concerned with removing any controls on the free market:

Consider the buffalo and the cow. . . .Biologically, these are very similar animals, and yet it is only fortuitous that the buffalo--which for many years was allowed to run free, unowned by man--was saved from extinction. In sharp contrast, the cow has been domesticated for millennia; it has been owned and cared for by farmers and herdsman from biblical times and even before.

What happened to the buffalo, and what is currently happening to the rhinoceros and the elephant as well, is once again an instance of the tragedy of the commons. If no one is allowed to private property rights over the buffalo, then it does not pay for anyone to protect it or see that it is not hunted to extinction. When a buffalo died in the non-private property days of “Home, Home on the Range,” no one lost any money. It can be expected that no acted to prevent such occurrences. When a cow dies, in contrast, the owner suffers. . . .<sup>2</sup>

Block goes on to apply the argument to threats to the rhinoceros and the elephant, citing encouraging results from privatization of elephant herds in Zimbabwe.

So: the economic argument says in effect: if bio-diversity is “worth” more than money-- such value is irrelevant, till that diversity is brought into the free market of economic transactions which “counts” in today’s world. The problem, of course, as “the tragedy of the commons” makes plain, in a market economy, if people aren’t willing to pay for something, the thing has no “value”. Granted that some feature of an undiscovered rain-forest plant may be worth billions of dollars at some time in the future. But who will pay the “opportunity cost” to preserve large tracts of forest for the mere possibility of such a discovery? When development projects (mines, farms, dams) can be justified on the basis of more obvious financial returns, the hypothetical undiscovered plant (and the ecosystem of which it is a part) doesn’t have much chance.

My intention is not to reject the market system; the centrally-planned economies did not do much better before their collapse. I put this overwhelmingly pervasive form of valuing at the bottom of my list because it is inadequate. Willingness of someone to own or pay for a living thing or its product is not enough. For example, in the face of the more obvious economic benefits from a dam or a road, the possibility of future genetic value does not go very far in ensuring the survival of species which have not even been discovered yet.

### **Pragmatic Valuing: Survival**

I move on to a second reason often given for “valuing” the diversity of life. It is not narrowly economic, but it too is pragmatic, though on a much larger scale. It is based on the premise that

the earth's biosphere is a vast network of inter-relationships with other living things and the non-human environment. The premise is stated most comprehensively in James Lovelock's Gaia hypothesis: that many features of the planet, especially its atmospheric composition, are actually tailored by life to provide the best environment for life. The next pragmatic step is obvious: If this complicated network of biodiversity is our life-support system, then we degrade it at our peril. Such a premise lies behind the image of the planet as a "spaceship earth." Someone has compared disappearing species to the rivets on an airplane wing. Losing one rivet is no worry: but what if a tenth of the rivets are lost? Or half? At some point the wing will fail, taking its human cargo down with it. So also, in pragmatic self-interest, we need to keep a healthy biosphere.

A version of this pragmatic argument is well-expressed by the father of "Deep Ecology", Arne Naess: that is, we protect life as we protect our own bodies--because in a sense the biosphere *is* our own body. Just as we don't think it particularly ethical to eat and breathe, so we needn't think it ethical to protect those other living things to which we are, ultimately, connected. It is simply self-interested sanity.

But the emphasis is still on human self interest. Bio-diversity, in this framework, has value because it is necessary for our survival. But if living things are of value to us only as rivets in an airplane wing, then they can be replaced by their functional equivalent. Who cares what the rivets are made of, so long as the plane keeps flying? If a rare species is valuable for its ability to provide a particular chemical compound, then its value disappears when that chemical is synthesized. It has been argued that the rain forests need to be preserved because they are "the lungs of the planet." But is the worth of all those millions of creatures nothing more than that of an elaborate air-purifying system?

This second means of valuing biodiversity does not depend, like the first, on reducing all living things to their cash value. But as in economic valuing, the worth is centred not in the living thing, but in what it can contribute to our well-being. Thus the intrinsic value of biodiversity is always under the cloud of the possibility that human ingenuity can discover a functional substitute for the living thing.

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There are other ways of valuing the diversity of life which focus on the worth of the living things in themselves, not merely on what they can provide us. For want of a better term, I have called all three of these frameworks "religious": I mean by that word a way of life based on a faith commitment to what is ultimately true. That definition is broad enough to encompass pantheism, theism, and science. But, as I will try to show, science itself, though it provides the most adequate framework for valuing, is itself a kind of implication and consequence of Christian theism.

### **3. Religious Valuing: Pantheistic**

The first of these religious reasons for valuing biodiversity is pantheistic. It says that we ought to value--and hence preserve--biodiversity because life itself (perhaps everything) is divine, and hence worthy of reverence and even worship. This position is consistent with primitive animism, with more sophisticated views like Hinduism, and with philosophies like Stoicism (with its elevation of Nature) and the more recent thought of Spinoza. In North America, many Native peoples had a tradition of apologizing to the spirit of an animal before it was killed for food. Similar respectful attitudes are recorded for forest peoples dependent upon trees. Jainism (like Buddhism an ancient reform movement within Hinduism) is the most consistent in that it regards all taking of life, plant or animal as a sin. The righteous Jain eats little; the Jain saint dies of starvation. Not surprisingly, Jainism has never been a very popular religion. But it has survived across 25 centuries, perhaps because of the rigorous consistency of its position: if all life is divine, then harming any life is a sin.

The implications of this kind of pantheism for valuing bio-diversity are obvious: if all living things are divine, we should do no harm to them. In the last couple of decades, the environmental or "deep ecology" movement has become overtly spiritual, turning away from technical fixes and towards spiritual change. It is, in many respects, an ethic looking for a religion, and the religion of choice is some form of pantheism. Many try to practice some kind of "earth spirituality"--often accompanied by vegetarianism. They do this not for health, or economic reasons, but for religious reasons not too distant from Jainism: the conviction that it is a sin to take life.

Neo-paganism is a rapidly growing religious movement in both Europe and North America. This attempt to revive or re-invent Celtic, Norse, or other old religions is deeply rooted in a conviction that all things are divine, and has drawn many people to the practice of Wicca--often combined with an ecofeminist honoring of "the goddess" of the earth, sometimes named Gaia. Consider these words from a contemporary Wicca priestess (taken from the internet where--somewhat paradoxically--neo-paganism flourishes):

I am Pagan. I am a part of the whole of Nature. The Rocks, the Animals, the Plants, the Elements, and Stars are my relatives. . . . I am pagan. I embrace Pantheism, acknowledging that the Divine is everywhere and in everything. I honor the Divine that is within the oak trees in the forest, in the herbs in the garden, in the wild birds singing in the trees, in the rock outcroppings on the hillside, in myself. . . .

This conviction that the whole, with all of its diverse parts, is divine, was well-expressed by the American poet Robinson Jeffers, nearly 50 years ago, in lines which gave the title to the *Friends of the Earth* journal, "Not Man Apart".

. . . *however ugly the parts appear the whole remains beautiful. A severed hand Is an ugly thing, and man dissevered from the earth . . . Often appears atrociously ugly. Integrity is wholeness, the greatest beauty is Organic wholeness, the wholeness of life and things, the divine beauty of the universe. Love that, not man apart from that. . .*<sup>3</sup>

Singling out “man” as the only creature made in God’s image, say modern pantheists, lies behind the human mistake of “speciesism”, acting as though one species in all of life’s vast diversity has any connection to the divine. An alternative is the position of “biocentric equality”, based on the divinity of all things.

One of the places where the idea of “biocentric equality” has surfaced in ordinary language is in the substitution, in the near replacement, over the last couple of decades, of older words for the totality of life--words like “Nature” or “The Creation”, with the word “the environment”. It is always “the environment”--never “my environment” or “our environment”, for such usage would take us back to the self-interested context of biodiversity as being valuable only because it ensures our own survival. But the phrase “the environment” is oddly centerless. It raises the question “whose environment” or “environment for what”--a question, however, which can never be answered without somehow acknowledging that human beings are different, that they stand out, that they have a unique place in the web of relationships. But modern pantheists are reluctant to acknowledge that difference, lest it lead back to the kind of “speciesism” which is said to disvalue biodiversity to the level of human commodity.

Pantheist religious views do indeed provide an alternative to the self-centred and pragmatic context for valuing which we considered earlier. Pantheism, in whatever form, values the diversity of life for its own sake. The problem with pantheism, which effectively dissolves the human centre, is well illustrated not only by this oddly centerless use of “Environment”--but by the Jain idea that the most righteous human person starves to death. It leaves us no room to be human. Nor, it seems to me, does it speak to the profound ambiguities of human nature, which lead to our ability to destroy species wilfully (which we have been doing ever since pre-historic times)--and at the same time, to honour and value them--which we have been doing just as long, as (for example) the Lascaux cave paintings suggest.

### **Religious Valuing: Theistic**

A fourth reason for protecting the diversity of life is theistic, and it is rooted ultimately in the passionate Hebrew proclamation that the Creator is not to be confused with Creation. “The earth is the Lord’s” says one of the Psalms; hence it is neither to be worshipped as divine--nor degraded as worthless. We ought to care for the earth’s diversity of creatures because they *are* creatures: creations of a loving and personal being who through whatever process, sustains them as a gift of love.

Arguments for the protection of biodiversity which make use of the word or concept of “stewardship” are usually rooted (consciously or not) in some kind of theism which attributes value to all creatures because God made them, and which recognizes that human creatures have unique powers over--and responsibilities for--other creatures. The concept of stewardship implies responsibility *for* (in this case, for all other creatures) *to* some other person. (Interestingly, “stewardship”, a term and concept which has been embraced by many environmentalists, is viewed with suspicion by many of a pantheist or “deep ecology” orientation because the ability to a “steward” gives too high a place to human uniqueness.)

Biblical theism does portray humanity in a web of “horizontal” relationships to other creatures (a portrayal deeply resonant with current ecological understanding). At the same time, it pictures humanity as being in “vertical” relationship, representing creation to the Creator.

It is this idea that human beings in some unique sense are created in “the image of God” which has caused many to reject it, arguing that this supposed God-likeness underlies a concept of “dominion” which justifies “valuing” creation as nothing more than raw material for human projects.

But that kind of de-valuing of creation in the name of human dominion is a profound perversion of Biblical theism. Theists who value “bio-diversity” recognize that the references to human “dominion” over other creatures must be understood in a way which is consistent with the Biblical teaching that humanity is to “watch over” and “tend” the other creatures (the Hebrew word is even translated “serve”). What this means for valuing biodiversity is seen in the respectful “naming” of Genesis 2--or the gathering of two of every kind of creature (whether useful or not) by Noah in the story of the ark. The book of Job, in the centre of the Bible, shows God giving an answer to agonized human questions about the problem of suffering by a long, exuberant survey of the diversity of life, in which creatures are clearly “valued” by their creator for their own sake, not for their usefulness to humans.

Christians point to New Testament texts which link Christ to all of creation; to passages like Colossians 1 in which “all things” are reconciled to the Creator in Christ. The cross is not a symbol of divine Salvation for humans *out of* a fallen creation; rather it pictures the Creator’s self-giving will not to let creation be lost. At the same time, Christians believe, it is a demonstration to humanity of God’s way of exercising dominion (however much they have misunderstood and misused the dangerous idea that we are made “in the image of God.”).

Although most concern for valuing biodiversity is rooted, however distantly, in a theistic understanding of stewardship, a deistic strand in Christian thought--especially in Western Christian thought--has kept this link from being obvious. Deism emerged, in the late seventeenth century, as a belief in a watchmaker-like God who created the flawless mechanism of the cosmos, then left it to run on its own. The idea was useful for the emerging tradition of science, for it justified belief in an orderly creation, to be investigated by reason and “natural philosophy”, but with no accompanying demands of dogma or authority. Gradually, scientific confidence in understanding the mechanisms of creation became so great that the idea of an initiating craftsman whose creatures these were dropped out of the picture entirely: the understanding human mind effectively replaced the creating divine mind.

At the same time, in those who maintained some Christian faith, the concern to find evidence of God’s activity led to a search for gaps in our knowledge where the intervening hand of the Creator could be seen. For many, as these gaps for God’s activity have narrowed, so the gap between Christianity and science has widened. The theory of evolution (whose 1859 publication by Darwin was prompted by Wallace’s 1858 publication of the same ideas in the

Journal of the Linnaean Society) is widely regarded as beginning a catastrophic widening of that chasm between science and Christianity. As a result there are many Christians whose belief in creation has nothing to do with the valuing of creatures, and everything to do with proving divine interventions in the process of their creation. On the other hand, many scientists, naturalists, and environmentalists who are motivated by wonder and awe at the creatures, feel that to speak of that value in terms of “Creation” is to commit themselves to a kind of intellectual blindness which will impede understanding of the process by which life’s diversity has been shaped--and hence, of the value of that biodiversity.

The chasm between Christian theism and science was not inevitable. As David Livingstone, of Queen’s College Belfast has persuasively shown in his work *Darwin’s Forgotten Defenders*, many Christians applauded Darwin’s evolutionary hypothesis, feeling that it led to a deepening of that neglected Christian doctrine of the immanence of the Creator God. As one of those 19th-century Christians wrote, “a theory of occasional [divine] intervention implies as its correlative a theory of ordinary [divine] absence.”<sup>4</sup> Or, as C.A. Coulson put it (Coulson was a twentieth-century professor of mathematics at Oxford): “Either God is in the whole of nature, with no gaps, or He’s not there at all.”<sup>5</sup> Such a belief is not pantheistic--it is orthodox, Trinitarian Christianity, though it has been obscured in the west, and appears most clearly in the unbroken Christian thought of Eastern Orthodox Christianity.

### **Religious valuing: Scientific**

This brief foray into Christian thought has been necessary as a prelude to discussion of my fifth and highest context for valuing: the scientific. For I am calling science too a *religious* framework for the valuing of biodiversity. Genuine science is rooted in awe, wonder, a sense of mystery--and of the value of the thing being studied: in short, in attitudes which could well be described as “religious”.

Two factors obscure this religious source of science. One is the language of science itself, which goes to great length to obscure the personal passions of the scientists who create it. Science sometimes is described as a “value free” activity which thus must remain silent on such questions as “the value of biodiversity.” Consider, for example, the form of the scientific paper: it is in the third person and the passive voice. “If these materials are combined under these circumstances, this reaction is observed to take place.” But no *person* does it: we infer the existence of persons only from the author of the paper. So the investigation of the world continues under the charade that no one is doing it; that facts are emerging passionlessly from the undifferentiated chaos of nature. Michael Polanyi, in his great work *Personal Knowledge* sets this myth to rest by showing decisively that science is an intensely personal dialogue with an unknown reality which is nevertheless believed to be knowable. Polanyi is fond of applying Anselm’s dictum, “I believe in order to understand” to both scientific and religious knowledge.

Another factor which obscures the value-rich--and essentially religious-- nature of science is that the wonder-driven search for knowledge of an ever-deepening mystery is so often short-circuited by the human drive for power. The gap between new knowledge and our application of that

knowledge in further human mastery of the world is always narrowing. As many biologists have complained, in North America in this new era of genetic engineering, , whole biology departments have effectively been purchased by grant money from corporations hungry for more marketable knowledge. It is of course not wrong to use knowledge. But that which drives science, that which makes it in its purest form a religious activity, is not the pragmatic or economic use to which knowledge is put; it is rather the sense of penetrating deeper and deeper into an awe-inspiring mystery.

### **The Strange Case of E.O. Wilson**

This fundamentally religious attitude at the heart of true science is expressed very well in a kind of prayer that appears in the middle of *Naturalist*, the autobiography of one the most respected and influential of 20th-century biologists, E.O. Wilson:

Take me, Lord, to an unexplored planet teeming with life forms. Put me at the edge of virgin swampland dotted with hummocks of high ground, let me saunter at my own pace across it and up the nearest mountain ridge, in due course to cross over the far slope in search of more distant swamps, grasslands, and ranges. Let me be the Carolus Linnaeus of this world, bearing no more than specimen boxes, botanical canister, hand lens, notebooks, but allowed not years but centuries of time. And should I somehow tire of the land, let me embark on the sea in search of new islands and archipelagoes. Let me go alone, at least for a while, and I will report to You and loved ones at intervals and I will `publish reports on my discoveries for colleagues. For if it was You who gave me this spirit, then devise the appropriate reward for its virtuous use.<sup>6</sup>

Wilson begins this rich and engaging book by describing one of his earliest memories--seeing a large jellyfish in still water at an Atlantic beach. The moment is still with him--he describes it in the present tense: "I stand in the shallow water, staring down at a huge jellyfish in water so still and clear that it's every detail is revealed as though it were trapped in glass. The creature is astonishing. It existed outside my previous imagination."<sup>7</sup> After describing it, and many other creatures from that first summer of remembered awe, he says, "why do I tell you this little boy's story? Because it illustrates how a naturalist is created. [*I would add: how a scientist is created--but Wilson sticks with the old-fashioned word, "naturalist".*] "A child comes to the edge of a deep water with a mind prepared for wonder."<sup>8</sup>

That wonder led Wilson into a distinguished career as a field biologist, writer and teacher--he has been a professor at Harvard for over 40 years. His special subject of research was ants--towards which he has an attitude which can only be described as love. The study of ants might not seem very promising to many. But Wilson's career illustrates a point about the nature of reality made a hundred years ago by John Muir: "When you try to pick out anything by itself, you find it hooked to everything else in the universe." Wilson did (with a colleague) publish a 7- and- a half pound, 732 page work on ants which was awarded the 1991 Pulitzer prize for non-fiction (the first time that prize was ever given to a work of primarily scientific content). But Wilson's research on the distribution of ant populations in the tropics had already led to the very concept

of biodiversity--the way in which competing populations evolve to fill different niches in areas of varying size.

Wilson did not quite invent the term, but he is responsible for a good deal of its popularization. He edited the 1988 volume by that title--*Biodiversity*-- which published the results of a 1985 "National Forum on Biodiversity", convened in Washington DC in 1986. The word came into wider public usage as a result of the biodiversity accord at the Rio Earth Summit in 1992. (And George Bush's refusal to sign it) In that same year, Wilson published his own passionate case for the valuing of bio-diversity in a widely read book, *The Diversity of Life*; ten years earlier he had published *Biophilia* in which he set forth his case that a unique human characteristic is the love of living things. In an even more recent work, *Consilience*, Wilson attempts a kind of synthesis of the humanities, sciences, philosophy and religion around the single idea of our evolutionary connectedness to the rest of nature. But--as he does in his earlier book, *The Diversity of Life*, Wilson draws that book to a very specific and urgent point, reminiscent of the grim poem with which I began this lecture: the recognition that human society is moving the diversity of life into the greatest era of extinction the planet has known in its hundreds of millions of years. Wilson has become one of the most passionate, eloquent, and best-informed advocates for what he calls the "ethical imperative" of human "stewardship" of "Creation." The words are all his. And they are deeply consistent with the theistic framework I outlined above.

But here we come to a tragic paradox, which brings me back to the Christian understanding of creation, and to my conclusion.

Wilson's shared 1991 Pulitzer prize for his work on ants was not his first. He was also awarded the Pulitzer Prize in 1978 for his book *On Human Nature*. That work traced the implications for human nature of the theory of sociobiology--the idea that not only our physical bodies, but much of our social, ethical, and religious behaviour must be understood as the result of the ultimately random process of evolution in an ultimately purposeless universe. Wilson, more than anyone, could be called the father of sociobiology, whose name, influence and sometimes notoriety dates from the 1975 publication of *Sociobiology; The New Synthesis*. No one today can avoid looking long and hard at how deeply are roots of our humanity are embedded in (to use a metaphor from Genesis) "the dust of the earth."

But In *On Human Nature*, Wilson admits at the outset that his theory places human beings in a profound dilemma. If (in his words) "chance and environmental necessity" not God made the species, then, as he puts it starkly, "we have no place to go. . . . The species lacks any goal external to its own biological nature."<sup>9</sup> And if we had a place to go or a reason to act, that action is necessarily constrained by our genetic past. We are, in British biologist Richard Dawkins' phrase, "Gene machines" and thus not as free as we like to think we are.

Wilson concludes his book, in a chapter ironically entitled "Hope" with these words:

The true Promethean spirit of science. . . constructs the mythology of scientific materialism, guided by the corrective devices of the scientific method. . . kept strong by the blind hopes that the journey on which we are now embarked will be farther and better

than the one just completed.<sup>10</sup>

Wilson's words echo those of one of his acknowledged heroes, Bertrand Russell, who much earlier in the century concluded, in the face of what he perceived to be the obviously accidental nature of the universe that "only within the scaffolding of these truths, only on the firm foundation of unyielding despair, can the soul's habitation henceforth be safely built."

I submit to you that it is impossible to get from this conviction--that we are a cosmic accident, with no goal other than the perpetuation of our on genes--to the conviction that we have an ethical imperative to be stewards of creation. I believe Wilson is drawing on other, deeper insights when he makes that move.

I have argued that science provides the most adequate framework for the valuing of the earth's diversity of life. The environmental movement is, I have said, an ethic looking for a religion: for a fully adequate framework for binding together our understanding of ourselves, the universe, and our purpose. Neither economic nor survivalist pragmatics provides an adequate framework; neither, have I argued, do the various forms of monism or pantheism. Theism all too often worked itself into the blind corner of reading the book of Scripture in the absence of the book of creation, and of misreading even Scripture to the point of concluding that God is an essentially deist designer, occasionally stepping in to intervene miraculously in a creation that normally cranks along on its own. Such an un-Biblical understanding of the relationship of creator to creation provides no framework for valuing it. But such a description does not at all reflect the deepest Trinitarian understanding of the relationship of creation and creator which I tried briefly to outline earlier, in which the relationship of creator to creation is seen in a closeness and love exemplified most starkly in the cross, on which the Creator took upon himself the consequences of his decision to create.

And here we come to an aspect of Wilson's biography which I think is all tragically typical of people in the sciences, particularly the biological sciences. Wilson describes, in both his autobiography and in *Consilience*, his sincere early Christianity:

I had been raised a Southern Baptist, laid backward under the water on the sturdy arm of a pastor, been born again. . . I knew the healing power of redemption. Faith, hope and charity were in my bones, and with millions of others I knew that my saviour Jesus Christ would grant me eternal life.<sup>11</sup>

But, as Wilson goes on to make clear, there was no room in such a Christianity for his own passionate wonder at that primal first book of revelation, the whole created world. Especially there was no room there for an evolutionary understanding, an awareness that creation had taken place across time. And so, gradually, as he says, "not definitively agnostic, or atheistic" he "drifted away"--to the world where he was free to fully appreciate and study what Loren Eiseley calls "the immense journey" of living things.

Wilson's story is tragic not only because he found no support for his passionate love and care of

creation and creatures in his boyhood Christianity, but also because there is no such support either in a science whose main premise is that the world is a meaningless accident. As he says, with uncharacteristic honesty of what he call the myth of scientific materialism he has nothing to offer but blind hope. In his bones, of course, he knows better, as his language reflects: knows that we are called to be “stewards” of a creation of infinite value.

When I argue that science is the most adequate framework for valuing creation I mean the science which is open to the conviction that the universe is a meaningful creation, that we are called not only to study it, but to love it. For all creation and we in it, are made and upheld by a being whose very nature is love.

Value is not a mere preference--as in the post-modern, virtual-reality world of “choosing your own reality”. But neither can it be demonstrated by some impersonal calculus of price, profit or personal pragmatics. . It may be (as the grim poem with which I opened suggests) that we will have almost destroyed what we love before we realize that we love it--and are losing it. . Nevertheless: love is the only word which will do. Love implies responsible human persons, in relationship with the virtues of diverse living things.

The Christian conviction is that the creation is poured out from and is sustained, in all its marvellous interdependence, by the God who is love. Creation is the result of that ceaseless love; human beings are called to love it and care for it, and science is one of the main ways of expressing that love.

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1. Denise Levertov, “The Battered” in *Evening Train* (

2.[Walter Block, “Environmental Problems, Private Property Rights Solutions” in **Economics and the Environment: A Reconciliation**, ed. Walter Block (Vancouver: The Fraser Institute, 1990), pp. 307-308.

3. Robinson Jeffers, “Signpost”

4. Aubrey L. Moore, *Science and Faith* (London: Keagan and Paul, Trench, 1889), 184.

5. C.A. Coulson, *Science and Christian Belief* (London: Fontana Books, 1958), p. 35.

6. E.O. Wilson, *The Naturalist* (Washington, D.C.: Island Press, 1994), p. 171.

7. Wilson, *The Naturalist*, p. 5.

8. Wilson, *The Naturalist*, p. 11.

9. E.O. Wilson, *On Human Nature* (Cambridge, Harvard University Press, 1978), p. 3

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10. Wilson, *On Human Nature*, p. 209.

11. E.O. Wilson, *Consilience: The Unity of Knowledge* (New York: Vintage Books, 1998), p. 6.