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VOLUME 4 ISSUE 2

ARTICLES

The Dream of This Place with Us: Science, Religion, and the Environmental Crisis

By ROBERT L. NADEAU // *PAGE 8*

Building on Thomas Berry's notion that we require a "new type of religious orientation" consistent with "our new story of the universe," this broad ranging article reviews recent work in physics and cosmology and then relates it to an evolutionary understanding of religious imagination. The specific content of this imagination is culturally and historically diverse, but it has a unified underlying form rooted in our need for care and our capacity for empathy.

God or Nature: Desire and the Quest for Unity

By BILL VITEK // *PAGE 20*

Touching on the theme of the underlying unity of reality, this article insists on the fundamental importance of metaphysical, spiritual, and religious wisdom as the foundation of responsibility and as the key resource upon which a new ecological ethic can draw. Like Nadeau, Vitek is struck by the universality of basic conceptions found in religious traditions and in philosophical worldviews.

Humans, Nature, and Ethics

By GREGORY E. KAEBNICK // *PAGE 26*

Can the concept of "nature" or "the natural" be a foundation for ethics? Do we need to know the essence of human nature in order to be morally critical of human enhancement efforts? This article reviews several recent critiques of biotechnological human enhancement and considers the problem of basing law and policy to regulate biotechnology on strong metaphysical theories of nature and human nature.

REVIEWS AND REFLECTIONS

Re-Enchanting Liberalism: On the Prospects of Civil Religion

By BRUCE JENNINGS // *PAGE 33*

In a reflection on historian Mark Lilla's book The Stillborn God, this article reassesses the liberal argument for the separation of church and state, religion and the political realm, and argues that future challenges of ecological democratic citizenship may require us to take the notion of a civic religion seriously.

FEATURES

From the Editor

Another Economy

By BRUCE JENNINGS // *PAGE 4*

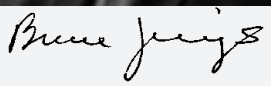
CHN Bookshelf // *PAGE 40*

The Last Word

Facing North from Michigan's Shores

By CURT MEINE // *PAGE 41*

FROM THE
EDITOR



ANOTHER ECONOMY

THE TENTH ANNIVERSARY OF THE terrorist attacks of September 11, 2001 is just around the corner. The last decade has been one of war and economic crisis. It has also been one of ideological polarization and political paralysis. A historically significant achievement of governance—health care reform intended to increase access and social justice—has not been cause for collective celebration and affirmation. A globally significant challenge—slowing and reversing the deadly process of climate change—has not united us in common effort and common purpose. A pervasive atmosphere of distrust has arisen from which even scientists are not immune. Business as usual, politics as usual, and even reason as usual seem to have become derailed and unhinged. Ways of coping with instability that have served our society in the past—such as government fiscal stimulus, regulatory reform, international negotiation and coordination, appeals to personal conscience, philanthropy, and responsibility—seem unavailing. What have we wrought? What kind of world are we squeezing into (or out of) shape?

It is difficult to avoid the suspicion that we are losing our grip on something fundamental, yet it is also difficult to say what—our optimism? our resilience? Our Republic is thickening into Empire, as Robinson Jeffers put it. Incremental reforms and tinkering with the plumbing of our political economy will not suffice, yet that is all our leaders and institutions are capable of achieving at the moment, if even that. What may be imperative now is a cultural revolution, a transvaluation of values of the kind that has punctuated our history from time to time but always occupies a vexed and dangerous intersection—the corner of church and state. I am talking about an alteration of metaphysics and meaning into a new story about ourselves, our duties, and our destinies.

When it comes to rethinking assumptions and values, there is no better or more fundamental place to begin than with the ideas of scarcity, affluence, and economic growth. Today we live with an ever present awareness of scarcity. There are not enough jobs. There is not enough money to keep pace with rising prices and taxes. Necessary services are often not available. We are running out of credit. We are running out of oil, gas, and affordable sources of energy. We are running out…We are running…

This scarcity is paradoxical. Scarcity sits side by side with material affluence. Indeed, our great stock of possessions may even reinforce our sense of scarcity. The key to this paradox is the realization that scarcity and affluence are not primarily economic issues, they are moral and religious ones. They are not primarily about how much we have, but about how we relate to others and how we live. Scarcity is not the same thing as frugality, just as affluence is not the same thing as abundance. Frugality can bring people together in closer connection. Scarcity drives people apart and makes us anxious and insecure, and so does affluence. Frugality, as in the times of rationing and hardship during World War II, actually brought about a sense of solidarity and connectedness; everyone had to help one another because they were all in the same boat. Abundance can have similar community and solidarity building effects. But neither scarcity nor affluence today are conditions of society or spirit that we genuinely share; they are merely ways of

BRUCE JENNINGS

FROM THE
EDITOR

living that affect (or afflict) all of us. The recognition is dawning that both affluence and scarcity are ways of living that are at once humanly unsatisfying and naturally unsustainable.

Scarcity and affluence are two sides of the same coin. They preside over a culture of competitive advantage; a culture of beggar thy neighbor. Children are taught the lessons of scarcity and affluence at an early stage, as with the kindergarten game Musical Chairs. Chairs for each child are arranged in a line and while the players are dancing around, one chair is taken away. When the music stops the children must scramble to get seats, which have now become scarce. Someone—the slow, the polite, the gentle—will be left out. Our economy today is Musical Chairs writ large and played on a global scale.

The great religious traditions of the world speak of another economy, an economy of being that is abundant. As an alternative to the economy of scarcity/affluence religion offers an economy of frugality/abundance. This is a counter-entropic economy where chairs are added, not taken away; an economy of life, justice, and love as an alternative to the economy of appropriation. Precisely because we are so enmeshed in the economy of scarcity/affluence and getting, it is very challenging and complex for us to see the economy of frugality/abundance and giving.

Above all, it is difficult for us to focus on how authentically we connect rather than on how successfully we acquire and consume. Frugality/abundance is not primarily about having or not having, it is about connecting, caring, and sharing. Abundance does not replace few things with many things; frugality is not about how few things we have but about how carefully they are used. The other economy named by religion is where making a living in an earth household becomes, not an activity that sets us apart, but one that heals us and makes us whole even within our mor-

> For I have learned
> To look on nature, not as in the hour
> Of thoughtless youth; but hearing oftentimes
> The still, sad music of humanity,
> Nor harsh nor grating, though of ample power
> To chasten and subdue. And I have felt
> A presence that disturbs me with the joy
> Of elevated thoughts; a sense sublime
> Of something far more deeply interfused,
> Whose dwelling is the light of setting suns,
> And the round ocean and the living air,
> And the blue sky, and in the mind of man;
> A motion and a spirit, that impels
> All thinking things, all objects of all thought,
> And rolls through all things. Therefore am I still
> A lover of the meadows and the woods,
> And mountains; and of all that we behold
> From this green earth; of all the mighty world
> Of eye, and ear,--both what they half create,
> And what perceive; well pleased to recognise
> In nature and the language of the sense,
> The anchor of my purest thoughts, the nurse,
> The guide, the guardian of my heart, and soul
> Of all my moral being.
>
> William Wordsworth
> "Lines Composed a Few Miles Above Tintern Abbey"

FROM THE
EDITOR

tality, our finitude, our vulnerability, and our insufficiency. Sharing makes small portions filling. Selfishness, grasping, makes large portions unsatisfying. The abundance that does not diminish the more it is shared is what transforms even scarcity into plenty. The abundance that makes possible a community of compassion and caring even in the worldly condition of scarcity is the exact opposite of our society's extended game of Musical Chairs.

Secular philosophy and ethics ask us to refocus our economic and political imaginations in these ways, but perhaps these appeals are ultimately incomplete without an underlying metaphysical and religious orientation, to undergird but not to supersede them.

The articles in this issue of *Minding Nature* struggle with the place of religious and metaphysical thought in human society generally and in modern, secular society, in particular. They converge on two themes. First, if we are going to have to change our *doing*, for the sake of justice as well as ecological survival, will we also have to change our thinking about *being*? Second, should fundamental beliefs about nature and the nature of our being be permitted to inform public policy and law? Are such beliefs a matter of "science" upon which rational public rules must be based, or should such beliefs and discourse be seen as "religion" and hence as out of bounds in the domain of public rules in a free pluralistic society?

In an article of remarkable breadth ranging across several fields, Robert Nadeau provides an update on recent theoretical and research work in physics and cosmology, neurology, evolutionary psychology, and comparative religion. In science he finds the discovery of processes of ontological convergence and an underlying unity of being. In evolution and religion he finds the development of an imagination and a sensibility that is both cross-cultural and trans-historical. He argues that it makes sense from an evolutionary and neurological point of view and that it shapes our moral response and action in powerful ways. He calls upon us to wage "the moral equivalent of war" on behalf of an ecological worldview of justice and harmony between humans and nature.

Bill Vitek explores a similar terrain of ideas as he narrates a tradition of environmental religion and philosophy based on essentially a spiritual apprehension of the unity of being. Like Nadeau, he believes that in this kind of spirituality or religious imagination, much more so than in secular materialism, we can find the touchstone to motivate and direct urgently needed social changes.

Greg Kaebnick's article focuses more specifically on human biotechnology and enhancement, but in this domain, as well as in a broader ecological ethics and politics, the question of strong metaphysical and religious viewpoints arise to divide the proponents of human biotechnology and its critics. Reviewing work in recent bioethics on this question, Kaebnick argues for the adequacy and desirability of what might be called a "weak" rather than a "strong" ontology as a basis for ethical and policy argument in a liberal society.

Standing behind the challenge and resonance of the positions these articles provide is the legal and political principle of the separation of church and state in the liberal democracies of the West. In my reflection and review essay, I explore the history of this liberal orientation. I also note its

FROM THE
EDITOR

continuing power in the contemporary polemical works that pit science and religion against one another, in precisely the fashion that Nadeau and Vitek are trying to overcome, and that Kaebnick also is seeking to avoid. One way to think about this issue is to ask what is real and what is true? Another way is to ask what use and distribution of power will be reinforced by a given worldview? In this sense, the clash between the individualism of Thomas Hobbes and the communitarianism of Jean-Jacques Rousseau, and the latter's notion of a "civil religion," take on a contemporary interest.

Curt Meine's Last Word column captures much that is simmering in the preceding pages, as only he can do, with a little help from Walt Whitman, T.S. Eliot, and Lake Superior.

In the end we are left asking what worldview or what ecological ethos will guide the way to another economy, beyond the dead ends of scarcity/affluence and into a more sustainable and resilient way of living in the way of frugality/abundance? As we struggle with these questions, we could do worse than revisit from time to time the intimation of Being larger than ourselves that Wordsworth in "Tintern Abbey" evoked as well as (or better than) any theologian or philosopher.

The Dream of This Place with Us: Science, Religion, and the Environmental Crisis

By ROBERT L. NADEAU

When you come, as you soon must, to the streets of our city,
Mad-eyed from stating the obvious,
Not proclaiming our fall but begging us
In God's name to have self-pity,

Spare us all word of the weapons, their force and range,
The long numbers that rocket the mind;
Our slow, unreckoning hearts will be left behind,
Unable to fear what is too strange.

Nor shall you scare us with talk of the death of the race,
How should we dream of this place without us?—
The sun mere fire, the leaves untroubled about us,
A stone look on a stone's face?

Richard Wilbur, "Advice to a Prophet"

When Richard Wilbur wrote "Advice to the Prophet" at the height of the Cold War, there was a very real possibility that human life and consciousness would cease to exist on Earth after the United States and the Soviet Union unleashed the destructive energy in their nuclear arsenals. According to Wilbur, the prophet who could prevent this tragedy would arrive on the "streets of our cities/ Mad-eyed from stating" the "obvious" scientific truths about the horrors of nuclear war. One piece of advice Wilbur gives his prophet is to "Spare us all word of the weapons, their force and range" because we are "Unable to fear what is too strange." His rationale for giving this advice is that we cannot conceive of a place where nothing would be aware of its own awareness and the beauty and wonder of the natural world would cease to exist: "How should we dream of this place without us?—The sun mere fire, the leaves untroubled about us,/A stone look on the stone's face." Wilbur then tells the prophet that if he can entice people on the streets of our cities into renewing their sense of the sacredness, sanctity, and beauty of life, the dream of Earth with us can be realized.

Environmental scientists are now mad-eyed from stating obvious scientific truths about the threats associated with the environmental crisis. And many of them are convinced that it is highly probable that our species will be on the path toward extinction if global warming triggers irreversible large-scale changes in the climate system. These modern-day Cassandras are also painfully aware that their scientific truths have not been heard by the people on the streets of our cities. And one reason why this is the case is that the people on these streets, like those in Wilbur's poem, are "unable to fear what is too strange" and cannot "dream of this place without us."

But unlike Wilbur's prophet, the scientific prophets must stand outside the gates of the cities where the climate change contrarians are winning the political debate about global warming by lying about the truths of science. Not surprisingly, these scientists are increasingly convinced that the fate of Earth is sealed by the ignorance, lack of compassion, and inexhaustible

greed of its human inhabitants. And since they are reminded on a daily basis that a great deal of scientific research clearly indicates that human life could soon become little more than a brutal struggle for survival, all of them are extremely anxious, and most seem to have one or more symptoms of clinical depression.

But what my scientific colleagues have apparently failed to realize is that it is possible to dream of this place with us. And if we manage to realize this dream, we could soon find ourselves living in a much more humane and equitable world. In this world, human populations would cease over time to suffer from the ravages of hunger, starvation, and disease; extreme and hopeless poverty would no longer be tolerated or ignored; the rights and freedoms now enjoyed by the citizens of fully functional democracies would be extended to the rest of humanity; and cross-border conflicts and wars of aggression would be viewed as remnants of a benighted human past that have no place or function in the vastly more enlightened human future.

“There is now a large and growing consensus in the environmental community that preventing an ecological disaster on a truly apocalyptic scale will require both a massive transformation of our political and economic institutions and new standards for moral and ethical behavior.

The reason why the realization of this dream could result in this more humane and equitable world is obvious in spite of the fact that it is rarely mentioned in the public debate about the environmental crisis: If there is not a very active commitment to creating this world during every stage in the process of resolving this crisis, it will not be possible to achieve the totally unprecedented level of good will and cooperation between all peoples and governments required to implement scientifically viable solutions for global warming and other menacing environmental problems.

Realists and pragmatists have routinely dismissed dreams of a better world as the products of the overheated imaginations of muddle-headed idealists who fail to recognize or properly understand what the critics regard as self-evident truths—the more invidious aspects of human nature, the harsh realities of geopolitical politics, the intimate connection between economic prosperity and competitive advantage, the vital role and function of a strong military in protecting and enhancing the interests of sovereign nation-states, and so on. The problem with this conventional wisdom is that the usual distinctions between idealism and realism, moral actions and pragmatic solutions, and idealistic conceptions of the better world that could be versus rational assessments of the world as it is are no longer commensurate with the terms of human survival. What these terms dictate is that idealism must be the new realism, that moral actions are the only means of achieving pragmatic solutions, and that idealistic conceptions of the better world that could be are the only rational basis for preserving and protecting the natural resources that sustain human life.

THE TRUTHS OF SCIENCE AND RELIGION

There is now a large and growing consensus in the environmental community that preventing an ecological disaster on a truly apocalyptic scale will require both a massive transformation of our political and economic institutions and new standards for moral and ethical behavior.[1] In the early 1990s, thirty-four internationally known scientists realized this is the case and wrote an “Open Letter to the Religious Community,” appealing to environmentally concerned people in the great religious traditions to create a worldwide religious movement dedicated to the resolution of the environmental crisis.[2] This appeal was taken seriously, and religious environmentalism is now a worldwide movement of alliances between people in different faith traditions, loose networks of spiritually motivated activists, and coalitions with secular environmental organizations. There are hundreds of groups of religious environmentalists that have engaged the political process in an effort to reduce emissions of greenhouse gases, eliminate toxic waste dumps, curb losses in biological diversity, prevent the destruction of wetlands and water sheds, and promote the consumption of locally grown organic foodstuffs.[3]

It is not difficult to understand why the scientists who wrote the “Open Letter to the Religious Community” concluded that religious environmentalism will be critically important in the effort to resolve the environmental crisis. As Bill McKibben puts it, “Only our religious institutions, among the mainstream organizations of Western, Asian and indigenous societies, can say with real conviction, with any chance of an audience, that there is some point to life beyond accumulation.”[4] Or as Roger Gottlieb points out, only religious consciousness can “take us beyond the con-

ventional ego, beyond a frame of mind in which we calculate our interests, struggle for success, seek to control the world to get what we want from it, or unendingly complain about every damn thing we don't have." It is, says Gottlieb, only the experience of "God or Ultimate Reality or Spirit" that makes us feel "less depressed, bored, anxious and selfish and more grateful, joyous and serene" and gives us a sense of "reverence and awe" that we exist in a universe that is "an enthralling mystery."[5]

The religious environmentalism movement has made some progress in dealing with environmental problems on the local or regional level. But it has not made any substantive contributions to the resolution of environmental problems on the global level because it lacks the infrastructure required to make those contributions. Another related problem is that the five great religious traditions of world do not have the same the views of nature or understanding of how environmental problems can or should be resolved.

This article intends to make the case that religious environmentalism could become a worldwide movement capable of making substantive contributions to the resolution of the environmental crisis if sufficient numbers of people in the five great religious traditions entered the new dialogue between the truths of science and religion. But the price that must be paid to enter this dialogue is a willingness to recognize, as Thomas Berry put it, that "existing religious traditions are too distant from our new sense of the universe to be adequate to the task before us. We cannot do without the traditional religions, but they cannot do what needs to be done." If we are to do what needs to be done, this will require, said Berry, a "new type of religious orientation" that is commensurate with and emerges from "our new story of the universe."[6]

THE NEW STORY IN PHYSICS

In the new story of the universe, the cosmos is a seamlessly interconnected whole that evolved toward higher levels of complexity. Perhaps the best way to briefly explain why this is the case is to imagine that you are one of two observers in a scientific experiment in which two photons originate from a single source and travel equal distances in opposite directions halfway across the known universe to points where each will be measured or observed. Before the photons are released, each of two observers is magically transported to one of the points of observation. And the task of the observers is to measure and record a certain property of each photon that has traveled over this enormous distance to the point of observation.

In spite of the fact that the photons are traveling at the speed of light, each observer would have to wait patiently for billions of years for one of the photons to arrive at his or her observation point. But suppose that the observers are willing to endure this wait because they hope to test the predictions of a mathematical theorem. This theorem not only allows for the prospect that a correlation might exist between the observed properties of the two photons. It also indicates that this correlation could occur instantly, in spite of the fact that the distance between the observers and their measuring instruments is billions of light years.

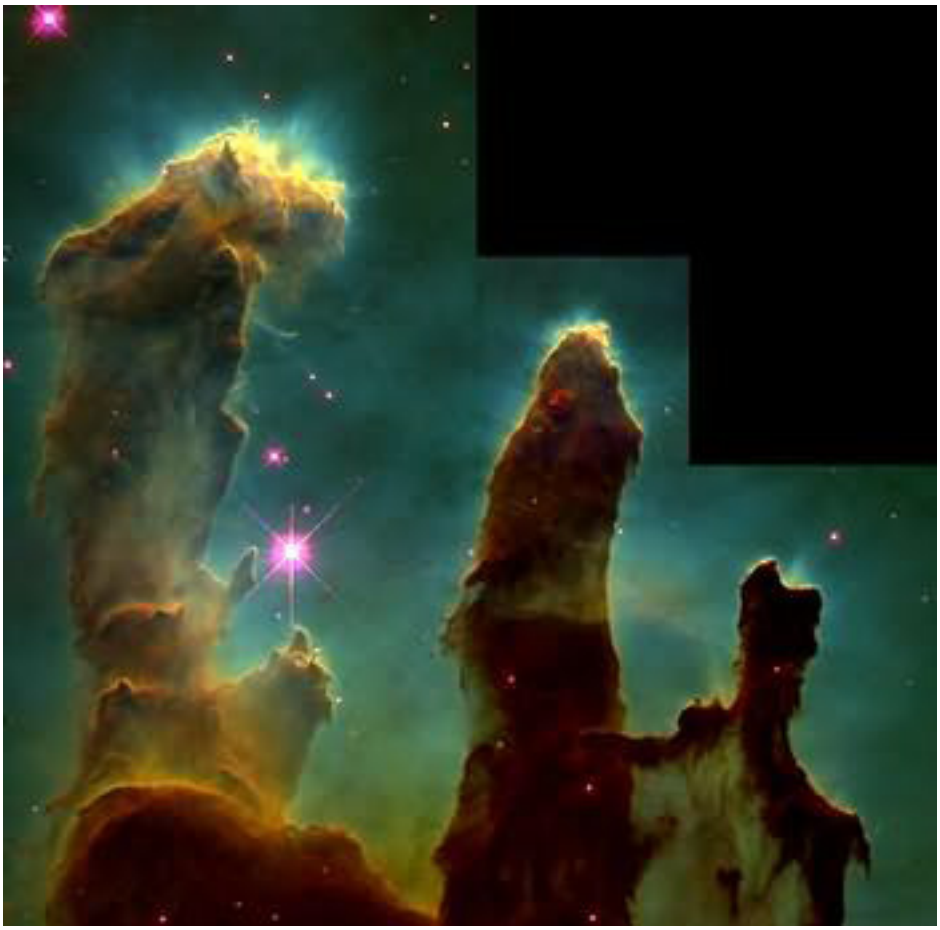
Now imagine that after the observations are made, the observers are magically transported back to the point where the photons were released, and the observations of both are compared. Strangely enough, the results would indicate that the observed properties of the two photons did, in fact, correlate with one another over this vast distance instantly. This imaginary experiment distorts some of the more refined aspects of the actual experiments in which photons released from a single source are measured or correlated over what physicists term space-like separated regions. But if we assume that the imaginary experiment was conducted many times, the results would be the same as those in the actual experiments.

> "...religious environmentalism could become a worldwide movement capable of making substantive contributions to the resolution of the environmental crisis if sufficient numbers of people in the five great religious traditions entered the new dialogue between the truths of science and religion

The intent in these experiments was to test some predictions made in a mathematical theorem published in 1964 by physicist John Bell. Like Einstein, Bell was discomforted by the threat quantum physics posed to the assumption in classical physics that there must be a one-to-one correspondence between every element of a physical theory and physical reality. Bell hoped that the results of the experiments testing his theorem would obviate this threat. But he also realized that these results would provide a basis for answering

some very large questions about our scientific understanding of the character of physical reality and the role of physical theory in achieving this understanding.

Would the results reveal that quantum physics is a self-consistent theory whose predictions would hold in this new class of experiments? Or would they reveal that quantum theory is incomplete and that its apparent challenges to the classical understanding of the correspondence between physical theory and physical reality were illusory? The answer to this question reached in experiments testing the predictions made in Bell's theorem would also determine which of two fundamentally different assumptions about the character of physical reality is correct. Is physical reality, as classical physics assumed, local? Or is physical reality, as quantum theory predicts, non-local? While the question may seem esoteric and the terms innocuous, the issues at stake and the implications involved were enormous.



The Pillars of Creation

Bell was convinced that the totality of all of our previous knowledge of physical reality, not to mention the laws of physics, would favor the assumption of locality. This assumption states that a measurement at one point in space cannot influence what occurs at another point if the distance between the points is large enough that no signal can travel between them at light speed in the time allowed for measurement. In the jargon of physics, the two points exist in space-like separated regions, and a measurement in one region cannot influence what occurs in the other if the assumption of locality is correct.

But quantum theory allows for what Einstein disparagingly termed "spooky actions at a distance." When two particles originate under conditions where their wave aspects are entangled, quantum theory predicts that a measurement of a property of one particle will correlate with that of the other particle even if the distance between them is billions of light years. The theory also indicates that even though no signal can travel faster than light, the correlations will occur instantaneously, or in "no time." If this prediction held in experiments testing Bell's theorem, we would be forced to conclude that physical reality is non-local.

After Bell published his theorem in 1964, a series of increasingly refined tests of the predictions made in this theorem culminated in experiments by Alain Aspect and his team at the University of Paris-South. When the results of the Aspect experiments were published in 1982, the answers to Bell's questions were quite clear—quantum physics is a self-consistent theory, and non-locality is a fact of nature.[7] In 1997, these same answers were provided by the results of twin-photon experiments carried out by Nicolus Gisin and his team at the University of Geneva.[8]

While the distance between detectors in space-like, separated regions in the Aspect experiments was thirteen meters, the distance between detectors in the Gisin experiments was extended to eleven kilometers, or roughly seven miles. This distance is so vast compared with distances on the realm of quanta that if the strength of the correlations held at eleven kilometers, physicists were convinced it would also hold in an experiment where the distances between the detectors was halfway to the edge of the entire universe. But if the

strength of the correlations significantly weakened or diminished, this would indicate that physical reality is local and that non-locality does not apply to the entire universe. This did not prove to be the case. The results of the Gisin experiments revealed that the correlations between detectors located in these space-like, separated regions did not weaken as the distance increased.[9]

> The most profound religious truth in the great religious traditions of the world is that spiritual reality is a single significant whole, and human life and consciousness emerge from and are embedded in this whole.

What is most important to realize here is that the new fact of nature revealed in these experiments, as physicist Bernard d'Espagnat was among the first to point out, is a "general" property of nature."[10] All particles in the history of the cosmos have interacted with other particles in the way that particles interact in the Aspect and Gisen experiments. Virtually everything in our immediate physical environment is made up of quanta that have been interacting with other quanta in this manner from the Big Bang to the present. Also consider that quantum entanglement grows exponentially with the number of particles that interact under conditions where this can occur, and that there is no theoretical limit on the number of these entangled particles.[11] This means that the universe on a very basic level is a vast web of particles that remain in contact with one another over any distance in no time. However strange or bizarre it might seem, we now know that physical reality is a seamlessly interconnected whole and that everything in this reality emerges from and is embedded in this whole.[12]

The most profound religious truth in the great religious traditions of the world is that spiritual reality is a single significant whole, and human life and consciousness emerge from and are embedded in this whole. We now know that the most fundamental truth in the new story of physics is that physical reality is a single, significant whole. Everything that exists in the vast cosmos, including human life and consciousness, emerges from and is embedded in this whole. As Schrodinger put it, "Hence this life of yours which you are living is not merely a piece of the entire existence, but is, in a certain sense, the whole; only this whole is not so constituted that it can be surveyed in one single glance."[13] Schrodinger also believed that the new story of the universe provides a basis for a dialogue between the truths of science and religion, and that this could eliminate what he viewed as a terrible deficiency in the scientific world view: "The scientific picture of the real world around me is very deficient. It gives me a lot of factual information, puts all our experience in a magnificently consistent order, but it is ghastly silent about all and sundry that is really dear to our heart, that really matters to us."[14]

Another profound truth in the great religions of the world is that the single, significant whole in spiritual reality cannot be reduced to or fully understood using ordinary language. Amazingly enough, the results of the experiments testing Bell's theorem also revealed that wave-particle dualism and quantum indeterminacy are indelible features of the life of the cosmos, and that there can be no one-to-one correspondence between every element of a physical theory and physical reality. This means that the single, significant whole in physical realty cannot be reduced to or fully understood using mathematical language.

This should have been obvious when Kurt Gödel published his Incompleteness Theorem in 1930. This extremely important but often ignored theorem shows that mathematics, the language of physical theory, cannot reach closure because no algorithm, or calculation procedure, that uses mathematical proofs can prove its own validity. In other words, any mathematical description of physical reality that claims to exhaustively describe any aspect of this reality cannot prove itself. As physicist Freeman Dyson puts it, "Gödel proved that in mathematics the whole is always greater than the sum of the parts."[15]

According to mathematician Rudy Rucker, "Mathematics is open-ended. There can never be a final best system of mathematics. Every axiom-system for mathematics will eventually run into certain simple problems that it cannot solve at all."[16] If a mathematical system cannot prove itself, it follows that none of the mathematical systems in physical theories can fully disclose or describe the actual dynamics of physical reality. Even if we did manage to construct a "Theory of Everything," this theory could not in principle be the final or complete description.

THE NEW STORY IN BIOLOGY

In the new story about the universe in the biologi-

cal sciences, life on the blue planet is also a seamlessly interconnected whole that evolved toward higher levels of complexity through the process of emergence. The term "emergence" applies to situations where new wholes spontaneously appear that have properties or display behavior that cannot be reduced to or understood in terms of their constituent parts. As Ernst Mayr put it, living systems "almost always have the peculiarity that the characteristics of the whole cannot (not even in theory) be deduced from the most complete knowledge of components, taken separately or in other partial combinations. This appearance of new characteristics in wholes has been designated emergence."[17]

Research in the biological sciences has revealed that the evolution of more complex organisms and processes occurs when an assemblage of parts in successive levels of organization results in new wholes that display novel properties or behavior. "Each higher level subject," note biologists P. B. and J. S. Medawar, "contains ideas and conceptions peculiar to itself. These are the 'emergent' properties."[18] From this perspective, organisms are not mixtures or compounds of inorganic parts, but new wholes with emergent properties that are embedded in and intimately related to other organisms with their own emergent properties.

We now know that the process of emergence has resulted in increasingly more complex life forms during the entire history of life on Earth. This history began with one self-replicating molecule, the ancestor of DNA; all organisms that have since existed on this planet directly descended from this single life form.[19] During the first two billion years, prokaryotes, or organisms composed of cells with no nucleus, were the only living inhabitants of planet earth. But over the course of these two billion years, interactions between these simple organisms resulted in the complex processes of fermentation, photosynthesis, and oxygen-breathing.

The reason why interactions between these simple organisms could result in such complex processes is that the absence of a nucleus with a surrounding membrane in the prokaryotes allowed bits of genetic material to be routinely and rapidly transferred between them. Consequently, an individual prokaryote or bacterium had the use of accessory genes, often from very different strains, which could perform functions not performed by its own DNA. What this picture suggests, according to Lynn Margulis and Dorian Sagan, is that "all the world's bacteria have access to a single gene pool and hence to the adaptive mechanisms of the entire bacterial kingdom."[20]

Because an individual bacterium could access genes in large numbers of other bacteria, the speed of recombination was much greater than that allowed by mutation in organisms with a nucleus. And this explains why the system of life could adapt to a change in the global environment in a few years. As Margulis and Sagan put it, "By constantly and rapidly adapting to environmental conditions, the organisms of the microcosm support the entire biota, their global exchange network ultimately affecting every living plant and animal."[21]

The discovery of symbiotic alliances between organisms that became permanent is another amazing aspect of our new understanding of the evolution of life on Earth. In the cells of higher organisms, there are several organelles that have double membranes. These organelles were originally separate organisms that evolved symbiotic relationships with other organisms. For example, the mitochondria found in the cytoplasm of modern animal cells allow these cells to utilize oxygen and to exist in an oxygen-rich environment. But the mitochondria that serve this function have their own genes composed of DNA, reproduce by simple division, and do so at times different from the rest of the cell.

The explanation for this extraordinary alliance between mitochondria and the rest of the cell is that oxygen-requiring prokaryotes in primeval seas combined with other prokaryotes. These ancestors of modern mitochondria provided waste disposal and oxygen-derived energy in exchange for food and shelter, and the previously separate organisms evolved together into more complex forms of oxygen-requiring life. Similarly, the ancestors of the chloroplasts inside the cells of all green plants were originally separate organisms that evolved the capacity to convert carbon dioxide and water into oxygen and sugar through the process of photosynthesis. Like the ancestors of the mitochondria, these prokaryotes combined with other prokaryotes in a symbiotic relationship, and a new life form emerged as a result.[22]

"Research in the biological sciences has revealed that the evolution of more complex organisms and processes occurs when an assemblage of parts in successive levels of organization results in new wholes that display novel properties or behavior.

A great deal of evidence also suggests that self-regulating and self-perpetuating dynamics in the whole (system of life) emerged from the interactions of all of the parts (organisms). For example, the fossil record indicates that the temperature of Earth's surface and the composition of its air have been continuously regulated by the interactions between organisms. Although the complex network of feedback loops that maintains conditions suitable for life is not well understood, there are good reasons to believe that the entire biota was responsible.

> "...the human capacity to engage in spontaneous moral behavior is an innate product of evolution, and ... moral concepts and emotions associated with this behavior are universal.

Also consider that the concentrations of atmospheric oxygen stabilized at about 21 percent millions of years ago and have stayed at this level ever since. If the concentration of oxygen had fallen a few percent below this level, oxygen-breathing organisms would have died from asphyxiation. Likewise, if the concentration of this volatile gas had risen a few percent above 21 percent, living organisms would have spontaneously combusted. The only reasonable explanation of why this did not happen is that feedback loops emerged in the interactions between organisms that regulated the concentrations of oxygen and other atmospheric gases. In the absence of these feedback loops, the quantities of these gases would be so minute as to be undetectable.[23]

Another clear indication that interactions between organisms have sustained conditions suitable for life has to do with the fact that the total luminosity of the sun, or the total quantity of energy released as sunlight per year, has decreased during the last 4 billion years by as much as 50 percent. If this was the case, it seems reasonable to conclude that the energy generated by the less luminous sun would have been greatly reduced and that temperatures on Earth during this period should have been at freezing levels. But the fossil record indicates that the temperature of Earth during this period has remained fairly stable at about twenty-two degrees Centigrade. The hypothesis here is that a vast network of feedback loops in the carbon cycle between volcanic eruptions, rock weathering, soil bacteria, oceanic algae, and the production of limestone sediments maintained Earth's temperature by regulating the amount of carbon dioxide in the atmosphere.

Equally remarkable, research in the biological sciences has also revealed that the system of life is self-organizing and self-perpetuating on the molecular, cellular, and embryological levels. This research has demonstrated that feedback loops between proteins, lipids, nucleic acids, cells, tissues, organs, and organisms modified the structures and functions of ecosystems in response to changing conditions in the environment. And we also know that there is a macro-level indeterminacy in the non-linear system of life, so future conditions in this system can only be predicted in terms of a range of probabilities.

In the new story of science about human evolution, all of the 7 billion people living on this planet today are the direct descendents of about two thousand individuals in the small tribe of hominids who evolved the capacity to acquire and use fully complex language systems about 64,000 years ago. The members of the original family of fully modern humans spoke the same language, lived in the same culture, and closely resembled one another in physical terms. After groups of their descendents migrated out of Africa in small hunter-gatherer tribes, language systems and cultures became increasingly more diverse, and minor mutations that enhanced the prospect of survival in particular ecological niches resulted in variations in skin color, facial features, and body types. But the story of science has revealed that we are all members of one extended human family and closely resemble each other in genetic, cognitive, and behavioral terms.

One of the pre-adaptations that contributed to the evolution of the brain regions and neuronal pathways that allowed our ancestors to acquire and use fully complex language systems is the mirror neuron system. Mirror neurons are concentrated in the premotor cortex, the posterior parietal lobe, the superior temporal sulcus, and the insual. They fire both when we perform a particular action and when we watch this action performed by others. In addition to simulating the action or behavior of others in the brain of the observer, the mirror neuron system also allows the observer to feel the emotions and grasp the intent associated with the action or behavior. Equally significant, this system operates with little or no feedback from higher-level cognitive processes and conscious reflective behavior. As the neuroscientist Giacomo Rizzolatti puts it, "Mirror neurons allow us to grasp the minds of others not through conceptual reasoning but through direct simulation. By feeling, not by thinking."[24] Given that the mirror neuron system provides a basis for imitation learning and simulating the behavior of others

on a pre-verbal or non-verbal level, it probably played a critically important role in the evolution of a gesture-performance communication system.

We have known for some time, as psychologist Seymour Epstein puts it, that "people apprehend reality in two fundamentally different ways, one variously labeled intuitive, automatic, natural, non-verbal, narrative, experiential, and the other analytical, deliberative, verbal, and rational."[25] But what we did not know until quite recently is that the brain regions and neuronal processes associated with the first of these fundamental ways in which we apprehend reality evolved prior to those associated with the use of fully complex language systems. Recent research in neuroscience and the behavioral sciences has shown that the neuronal processes in this much older, non-verbal system encode reality in images and metaphors and make connections through the process of association. It also shows that feedback from this system results in spontaneous moral behavior motivated by empathy, sympathy, and compassion. Further, this research reveals that the more recently evolved neuronal processes in the verbal system encode reality in abstract symbols, make connections by logical analysis, mediate behavior by conscious appraisal of events, and result in deliberative behavior that tends not to be motivated by empathy, sympathy, and compassion.[26]

The non-verbal system associated with spontaneous moral behavior probably enhanced the prospects of survival in small hunter-gatherer tribes often threatened by present, visible, and immediate dangers. And the legacy of this evolutionary past is apparent in the results of research in the behavioral sciences on the spontaneous moral behavior of surviving members of the extended human family. This research has shown that people are far more willing to provide aid that could relieve the suffering of identified individuals—those with known names and faces—than for unidentified individuals, alone or in groups.[27]

This research thus provides a basis for answering a question that that has perplexed moral philosophers and theologians for a long time: Why are good people who are quite willing to make personal sacrifices to preserve and protect the lives of identified individuals unwilling to make these sacrifices to preserve and protect the lives of large numbers of unidentified people? One of the possible explanations is that the spontaneous moral behavior that results in a willingness to make personal sacrifices for identified individuals is associated with neuronal processes in the non-verbal system, which operates on the unconscious level. The other is that the process of making decisions about whether to make personal sacrifices for large numbers of unidentified individuals is associated with neuronal processes in the verbal system, which operates on the conscious level.

The stark differences between spontaneous moral behavior associated with the unconscious non-verbal system and making decisions that could have moral consequences associated with the conscious verbal system are apparent in the following comment by Mother Teresa: "If I look at the mass I will never act. If I look at the one, I will." Another comment made by the novelist Annie Dillard nicely illustrates the difficulties involved in reconciling these differences: "There are 1,198,500,000 people alive in China. To get a feel for what this means, simply take yourself—in all your singularity, importance, complexity and love—and multiply by 1,198,500,000. See? Nothing to it."[28]

A great deal of research in the social and behavioral sciences also suggests that the human capacity to engage in spontaneous moral behavior is an innate product of evolution, and that moral concepts and emotions associated with this behavior are universal. For example, the anthropologist Donald Brown has compiled an impressively long list of these universal moral concepts and emotions. This list includes distinctions between right and wrong; empathy; fairness; rights and obligations; prohibitions against murder, rape, and other forms of violence; shame; taboos; and sanctions for wrongs against the community.[29] Studies done by anthropologists have also shown that people living in existing hunter-gatherer tribes display a strong belief in fairness and reciprocity, a great capacity for empathy and impulse control, and a pronounced willingness to work cooperatively for the good of the whole community. Finally, the results of numerous studies done on both children and adults living in highly industrialized Western countries clearly indicate that a violation of the expectation that others will display a sense of fairness evokes feedbacks from the limbic system associated with outrage and indignation.[30]

THE NEW STORY AND THE MOST PROFOUND TRUTHS OF RELIGION

The new story of science has also provided a basis for answering a question that has puzzled students of comparative religion for a long time: Why are descriptions of spiritual reality in the sacred texts of the great religious traditions remarkably similar in spite of differences in ontology, or in conceptions of the nature of

God or the Ground of Being? In one of the sacred texts of Hinduism, the *Bhagavad-Gita*, Lord Krishna says to Arjuna, "Of all that is material and all that is spiritual in this world, know for certain I am both its origins and its dissolution" (Gita 10.8). In the principal text of Taoism, the *Toa te Ching*, the Toa is described as the "Oneness" that cannot be named: "The Above of this Oneness is not bright, and the Below of this Oneness is not dark. As a continuum it cannot be named, and it again vanishes into no-thing-ness. It is therefore the form of no form, the image of no object" (*Toa Te Ching*, 25). In Buddhism, as Ch'an Master Huang Po puts it, "All the Buddhas and all sentient beings are nothing but the One Mind, besides which nothing exists. This Mind, which is without beginning, is unborn and indestructible. . . . It does not belong to the categories of things which exist and do not exist, nor can it be thought of in terms of new or old."[31]

> "...the most profound states of spiritual awareness are very similar regardless of the cultural contexts in which they occur, [thus] it seems reasonable to conclude that this experience, as William James put it, is the "mother sea and fountain head" of all of the great religious traditions of the world

In the Book of Revelation, God says, "I am the Alpha and Omega, the first and the last" (Revelation 1:8). In the Psalms, "the heavens tell of the glory of God and the firmament bespeak his handwork" (Psalms 19:1,4) and the "sea and everything in it" sings praises to God (Psalms 96:11). In the New Testament, Christ says, "That they may be one; as thou Father are in me, and I in thee, that they may also be one in us: that the world may believe that thou has sent me. And the Glory which thou has given me I have given to them; that they may be one, even as we are one: I in them and thou in me, that they may be made perfect in one" (John 17: 21-23). And it is written in the sacred text of Islam, the *Qur'an*, that, "Whithersoever you turn, there is the face of God" (2:115).

Students of comparative religion have also been puzzled by the fact that descriptions of the most profound religious experience in all of these traditions are remarkably similar. This experience is described as a wordless sense of communion with a single significant whole in which the self ceases to exist and there is no sense of the passage of time or extension in space. Those who have had this experience claim they were one with a spiritual reality that is both infinite and undifferentiated and that cannot be described in cognitive terms. They also claim that they perceive this reality during this state of pure spiritual awareness as non-local and unlimited, and that their experience of this state is not subjective in any sense.

What the new story of science has to say about this experience involves the results of recent experiments using computer-based brain-imaging systems. In one of these experiments, scientists at the University of Pennsylvania asked Buddhist monks and Catholic nuns to meditate or pray inside a single photon emission tomography (SPEC) brain-imaging system and to signal when they were in a state of profound spiritual awareness by tugging on string. When the monks and nuns indicated that they were in this state, the brain scans showed a dramatic decrease in neuronal activity in the left or dominant hemisphere that contains the major language centers and generates linguistically based narratives about a self separate from world. The scans also showed a large decrease in neuronal activity in the posterior parietal lobes associated with the differentiation and orientation of the body in three-dimensional space and the sense that events are progressing in time.[32] Since the brain scans of the Buddhist monks and Catholic nuns were virtually identical, the results of these experiments strongly suggest that they were in very similar states of profound spiritual awareness.

But when the subjects in these experiments were asked to describe this experience, the monks said they were one with the seamlessly interconnected Ground of Being, while the nuns said they were in the presence of a transcendent and immutable God. The most reasonable explanation for the seeming disparity between the experience of profound spiritual awareness and the descriptions of this experience is that the neurological processes involved are quite different. When the monks and nuns sensed that they were one with a single significant whole in spiritual reality, the cognitive processes associated with linguistically based constructions of reality and the experience of self as separate from world were deactivated. But when they were asked to describe this experience, these processes were reactivated. Thus, their descriptions were based on narratives about the character of spiritual reality and the relationship of self to this reality in their respective religious traditions.

If we can assume, as the results of these experiments suggest, that the most profound states of spiritual awareness are very similar regardless of the cultural contexts in which they occur, it seems reasonable to conclude that this experience, as William James put it, is the "mother sea and fountain head" of all of the great religious traditions of the world.[33] This explains, in my view, why the descriptions of the most profound state of spiritual awareness in the great religious traditions of the world are remarkably similar. And it could also explain why the most profound moral truth in these traditions is that the other is oneself and must be treated as one would wish to be treated.

Hinduism: "One should never do that to another which one regards as injurious to one's own self. This, in brief, is the rule of dharma." Taoism: "Regard your neighbor's gain as your own gain and your neighbor's loss as your own loss." Buddhism: "Hurt not others in ways that you yourself would find hurtful." Judaism: "The stranger who resides with you shall be to you as one of your citizens; you shall love him as yourself." Christianity: "All things whatsoever ye would that men should do to you, do ye even so to them." Islam: "None of you believes until he wishes for his brother what he wishes for himself."[34]

THE NEW ENVIRONMENTAL ETHOS

If the new dialogue between the truths of science and religion is as open and honest as it can and should be, it could serve as the basis for articulating and disseminating an environmental ethos with a profound spiritual dimension. In this ethos, all aspects of physical and spiritual reality, including human life and consciousness, emerge from and are embedded in a single significant whole. Those who embrace this ethos will realize that it is possible, as E. O. Wilson put it, "to love life enough to save it,"[35] and they will view love, in the words of Eric Fromm, as an art that requires "discipline, concentration and patience."[36] And those who practice this art will recognize that it is necessary, as Wendell Berry said, to "daily shed the blood and break the body of creation" to sustain human life. But they will do so "knowingly, lovingly, skillfully, reverently" and not "ignorantly, greedily, clumsily, and destructively."[37]

The practitioners of this art will have a deep and abiding sense of the sacred in their relationship to the natural world. They will be very much aware in their experience of this world that they are dealing with, as John Burroughs puts it, "primal sanities, primal honesties, primal attractions" and "touching at least the hem of the garment with which the infinite is clothed."[38] And they will view toxic waste dumps, polluted rivers and streams, dead zones in oceans and estuaries, decimated rain forests, and all the other wounds that we have inflicted on this world as utterly immoral and quite profane.

Those who embrace the new environmental ethos will also be familiar with what the new story of science has revealed about the role of emotions and about pre-conscious and unconscious processes in human thought and behavior. This story, as David Brooks puts it in his recently published book *The Social Animal,* obliges us to recognize the "relative importance of emotion over pure reason, social conventions over individual choice, character over IQ," and "emergent organic systems over linear mechanistic ones."[39] We now know that the cognitive processes associated with empathy, sympathy, and compassion operate largely outside of those associated with linguistically based narratives about self and world. And we also know that the primary determinant of our willingness to engage in moral behavior is these feelings, and not the moral codes embedded in these narratives.

In the view of the neuroscientist Michael Gazzaniga, this could explain why research in the social sciences has shown that there is little or no "correlation between moral reasoning and proactive moral behavior," and why most studies have not found any correlations.[40] It could also explain, as Rachel Carson put it, why "it is not half so important to know as to feel," and why a sense of wonder in our relationship to the natural world must be experienced rather than taught.[41] It is this experience, as Aldo Leopold famously said, that makes us realize that "A thing is right when it tends to preserve the integrity, sta-

"...the new dialogue between the truths of science and religion ...could serve as the basis for articulating and disseminating an environmental ethos with a profound spiritual dimension. In this ethos, all aspects of physical and spiritual reality, including human life and consciousness, emerge from and are embedded in a single significant whole.

bility, and beauty of the biotic community. It is wrong when it tends otherwise."[42]

ADVICE TO THE PROPHETS

If we are to resolve the environmental crisis, those who embrace the new environmental ethos must be willing to become the prophets who will soon arrive on the streets of our cities prepared and willing to wage a war aptly described by William James: "What we need to discover in the social realm is the moral equivalent of war: something heroic that will speak to men as universally as war does, and yet will be compatible with their spiritual selves as war proved itself to be incompatible."[43] The prophets in the volunteer army that wages this moral equivalent of war will be citizens of the world who refuse to recognize the authority or the validity of cultural narratives about nationalism and national identity. And the "something heroic" that will be "compatible" with their spiritual selves will be to extend the circle of human compassion to all of humanity and to preserve and protect the environmental resources that sustain human life.

The strategies used in fighting the battles in this war will be based on the philosophy of non-violence as it was articulated and applied by Mahatma Gandhi and Martin Luther King. The weapons used will be protests, rallies, town meetings, boycotts, and political campaigns promoted and organized with videos, documentaries, films, and Web-based communication networks. The prophets who fight will be armed with the truths spoken by the scientific prophets, and they will translate these truths into language that people on the streets of our cities can readily understand. But this language, in contrast with that spoken by the scientific prophets, will be infused with spiritual and moral truths that are universally recognized as such in the great religious traditions of the world.

These prophets will realize, as David Orr puts it, that there "are legitimate grounds for hope in hard times, but not one speck of ground for wishful thinking. We won't be rescued by more research, hypertechnology, or some deus ex machina. There is no anonymous 'they' who will figure things out."[44] They will also understand what Vaclav Havel meant when he said, "Hope is definitely not the same as optimism. It is not the conviction that things will turn out well, but the certainty that something makes sense, regardless of how it turns out."[45] And the hope that will be embraced by the prophets will be nurtured by doing good work, rising above the lesser self, and doing the right thing in a spirit of gratitude for and celebration of the gift of life.

These prophets will also realize that they now have a once-in-all-human-lifetimes opportunity. The opportunity is to realize the dream of this place with us and create in the process a more just, humane, and peaceful world in which extreme poverty does not exist and universal rights and freedoms are extended to all of humanity. This is not merely the work of an age, but a work that can preserve the memory of all ages. It is hard to imagine that anyone can serve a greater good or answer to a higher calling.

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A number of articles in the popular press also claimed that the results of the Gisin experiments showed that faster-than-light communication is possible. This misunderstanding resulted from a failure to appreciate the fact there is no way to carry useful information between paired particles in this situation. The effect studied in these experiments applies only to events that have a common origin in a unified quantum system, like the annihilation of a positron-electron pair, the return of an electron to its ground state, or the separation of a pair of photons from the singlet state. Since any information that originates from these sources is, in accordance with quantum theory, a result of quantum indeterminacy, the individual signals are random, and random signals cannot carry coded

information or data.

The polarizations, or spins, of each of the photons in the Gisin experiments carry no information, and any observer of the photons transmitted along a particular axis would see only a random pattern. This pattern makes non-random sense only if we are able to compare it with the pattern observed in the other paired photon. Any information contained in the paired photons derives from the fact that the properties of the two photons exist in complementary relation, and information is uncovered only through a comparison of the difference between the two random patterns. While the discovery that non-locality is a fact of nature will not result in a technological revolution in the telecommunications industry, it does represent a rather startling new addition to our scientific worldview.

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Over twenty years ago, the late Dr. Carl Sagan spearheaded a joint appeal to the religious and scientific communities for environmental action. A statement or "Open Letter" entitled "Preserving and Cherishing the Earth: An Appeal for Joint Commitment in Science and Religion" was signed by thirty-two Nobel laureate and other scientists and was presented on January 1990 to the Global Forum of Spiritual and Parliamentary Leaders Conference in Moscow. Two hundred and seventy-one well-known spiritual leaders from 83 countries also signed the appeal. An excerpt from this statement is below. For the full text and list of signatories, see http://fore.research.yale.edu/publications/statements/preserve.html

The Earth is the birthplace of our species and, so far as we know, our only home. When our numbers were small and our technology feeble, we were powerless to influence the environment of our world. But today, suddenly, almost without anyone noticing, our numbers have become immense; and our technology has achieved vast, even awesome, powers. Intentionally, or inadvertently, we are now able to make devastating changes in the global environment-an environment to which we and all the other beings with which we share the Earth are meticulously and exquisitely adapted.

We are now threatened by self-inflicted, swiftly moving environmental alterations about whose long-term biological and ecological consequences we are still painfully ignorant-depletion of the protective ozone layer; a global warming unprecedented in the last 150 millennia; the obliteration of an acre of forest every second; the rapid-fire extinction of species; and the prospect of a global nuclear war which would put at risk most of the population of the Earth. There may well be other such dangers of which, in our ignorance, we are still unaware. Individually and cumulatively they represent a trap being set for the human species, a trap we are setting for ourselves. However principled and lofty (or naive and shortsighted) the justifications may have been for the activities that brought forth these dangers, separately and together they now imperil our species and many others. We are close to committing–many would argue we are already committing–what in religious language is sometimes called Crimes against Creation.

. . .Problems of such magnitude, and solutions demanding so broad a perspective must be recognized from the outset as having a religious as well as a scientific dimension. Mindful of our common responsibility, we scientists-many of us long engaged in combating the environmental crisis-urgently appeal to the world religious community to commit, in word and deed, and as boldly as is required, to preserve the environment of the Earth.

. . .The environmental crisis requires radical changes not only in public policy, but in individual behavior. The historical record makes clear that religious teaching, example, and leadership are powerfully able to influence personal conduct and commitment.

God or Nature: Desire and the Quest for Unity[1]

By BILL VITEK

It is high summer here in way-upstate New York—twenty miles from the Canadian border—where I work and live. It is that brief time of year when the sun seems to lounge its way across the sky, and when its work in June and July now brings warmth to even our most shaded nooks. With the first frost just over the autumn horizon we dare to complain of the heat, of the mountain of produce needing canning, and of those club-sized zucchinis hiding under green leaves that seem too big for our northern latitude. It is a good time to consider the source of this harvest; those myriad, uncountable, interconnected, and creative forces with many names—some religious, others scientific—that share a common, universal source. How this interconnectivity was severed, and why we need to recover it, are the topics of this essay.

The "why" is all around us, too. We live in a divisive and divided world. Religions clash with each other and against those who choose a secular path. Secularists deride religion and call for its elimination in favor of a fully rational and mechanistic world. A voracious global consumerism treats our sun-powered, living ecosphere like a supermarket and dumpster. The gap between rich and poor grows ever wider, and human slavery is on the rise worldwide. What we used to call a "heat wave" is now the new thermostat setting of a feverish planet.

If we need a visual to see these divisions at work, the Gulf of Mexico is one among too many examples of a world gone wrong. One of the world's great ecosystems, the Gulf is also the sink for all the nitrogen and herbicidal runoff from America's breadbasket, creating a deadly hypoxic zone that is estimated to be six thousand square miles in size. Industrial agriculture argues that fertilizers and pesticides are necessary to feed a burgeoning human population. What the gargantuan machines cannot harvest is gathered by poorly paid and sometimes poorly treated migrant farm workers. Nearly 85% of all corn and soybeans grown in the farm belt go to feeding livestock who live short and miserable lives, and whose deaths demean both them and the men and women who "process" them. And I haven't even mentioned last summer's oil spill. The problems in the Gulf are many, as are their interconnected and too often invisible causes. Each of us can be found somewhere along this complicated chain—and along many others as well—whether through our use of cars, our food, our retirement funds, or our institutional endowments. Our hands are in the oil and the blood and the pesticides, even if our hearts recoil.

Social movements have sought for centuries to call our attention to the maltreatment of our fellow humans and the natural world. Religious and secular leaders speak eloquently of the harms and wrongs and of the need for reconciliation and redemption. Technologists offer the latest, greatest fix. And still the problems persist, worsening in a world with weapons of mass destruction and misery, made up of frayed ecosystems and filled with the frustrations and despair of a human population growing weekly by the millions. Against this onslaught our fixes seem like so much duct tape. The divisions we are trying to repair on the fly go to

the deepest levels of the human capacity for thought; beyond politics, science, and technology; beyond even ethics and morality. These divisions reside in our most basic assumptions about what we think exists in the world: the real, the true, and the meaningful.

Philosophers call this kind of thinking *metaphysics,* a term given by later thinkers to Aristotle's attempts at what he himself called "first philosophy," "first science," "wisdom," and "theology," but never "metaphysics." While philosophers of nearly every generation since Aristotle have disagreed on what this term actually means and even about whether metaphysics is possible, metaphysical thinking in general describes our commitments to and judgments about the most basic units of reality and their interrelationships. Trees? Real. Tooth Fairies? Not real; well, probably not. Santa Claus? I'm not saying. Miracles? God? Souls? The external world? An infinite universe? Anti-matter? And what about the connections? What *is* a tree *really,* and can we talk about a tree separate from the soil, microbes, water, nutrients, oxygen, temperature, and gravity that make it, and our observation of it, possible? Metaphysics is a "theory of reality in general,"[2] a system that attempts to account for everything in the universe. As audacious as that sounds, metaphysical systems come in all shapes and sizes and from across a large span of human thought: from the creation stories and ancient texts of every culture to attempts to explain the recent discoveries in quantum physics and ecosystem science.

"Personal and cultural ontological commitments to this or that reality—or to the existence of a loving God, the reincarnation of the dead, or the belief that animals are soulless machines, for example—really do matter in how the world is seen and treated. Largely invisible in everyday life, these metaphysical commitments hold up all the other systems in our complex cultures.

Personal and cultural ontological commitments to this or that reality—or to the existence of a loving God, the reincarnation of the dead, or the belief that animals are soulless machines, for example—really do matter in how the world is seen and treated. Largely invisible in everyday life, these metaphysical commitments hold up all the other systems in our complex cultures. Astrology and alchemy were once taught in the world's greatest universities because they were thought to express real causal events and objects. Not anymore. Animal vivisection, thankfully, is no longer practiced in medical schools because of our altered metaphysical assumptions about animals. If you believe that a God exists who decides when to end the world, you will be less likely to worry about climate change or a Manhattan-sized meteor hurtling toward Earth.

Historically, interest in metaphysical thinking tends to pick up in cultures when all the other systems are in serious forms of disarray. In other words, when your metaphysics needs fixing, you know that things are bad. The Axial Age, a period of history identified by German philosopher Karl Jaspers as spanning 800–200 BCE, was just such a time. India, China, the Middle East, and the Mediterranean basin all saw transformational transitions away from tribal, animistic, and polytheistic cultures with gods, goddesses, and rituals connecting humans to nature. The invention of agriculture and the torrential release of energy-rich carbon stored in the soils and forests fueled advances in cultural complexity, increases in population, the invention of writing, the mining of iron and bronze, social stratification, and ever more destructive implements of war. The Axial Age was born out of these dramatic changes and conflicts, and it gave birth to two new and often competing metaphysical systems: monotheism and humanism.

The Axial Age, in other words, reordered the metaphysical landscape and gave us the three primary and distinct metaphysical units we live with today: God, humans, and nature. God is up there, all powerful and loving; nature is down here, mostly passive and resourceful. Humans are in between. God becomes separate; nature becomes secondary; and humans share in both divinity (our reason, mind, or soul) and nature (our bodily desires and appetites). We live in a world divided by a Jewish-Christian-Islamic God and a Greek and later Enlightenment rationality—a world made separate and very much unequal.

The story of how Yahweh, a minor warrior god and one among many gods worshipped by the tribe of Israel in the Eastern Mediterranean in 1200 BCE, became the one and only God—a monotheistic force existing outside of space and time, all powerful and merciful, now worshipped and followed by one in three people living on the planet—is as fascinating as it is improba-

ble. So, too, is the development of the great philosophical and mathematical systems of the Greeks, premised on a similarly radical notion that humans are the measure of all things. Buddhism and Confucianism, too, utilize human reason as a tool to understand the mind and to create social customs. Both are humanistic at their roots, eschewing God and gods for *this* world and confident of the power of humans to transform themselves *by* themselves.

Modern history is filled with the conflicts between these two great world systems. But monotheism and humanism also share a common intolerance of views of reality that contradict their own views. Alternative views are labeled unreal, false, dangerous, heretical, or meaningless. In addition, both of these metaphysical systems see nature as inferior—as either a stage to work out one's salvation or a resource base to capture and utilize. We live day to day with these grand systems of reality and meaning and with the conflicts and divisions they create. They are revealed when we reject all ideas of God as "unscientific," or, in Christopher Hitchen's words, as the "first, worst" explanations of how the world works, which are now completely unnecessary. Or when monotheists reject scientific claims simply because they conflict with or are not revealed in their sacred texts. But even dyed-in-the-wool humanists, materialists, Big-Bang theorists, and Darwinists have lingering questions about the world before the Big Bang or the seeming gap between human development and that of all other primates. Yes, we are all primates, but some primates seem, well, more advanced than others. Why else would we still accept the "sapiens" description of ourselves or dare to explode nuclear devices in the New Mexico desert or drill holes miles down on the ocean floor or treat other living creatures as mere meat machines?

This metaphysical segregation of the divine, the natural, and the human has had lasting effects. It puts the sacred and the divine somewhere out there, available only by membership. It turns nature into a collection of parts and processes. And we humans are stuck in the middle, both mind and machine, secular and spiritual. The natural world has suffered the most, but we are suffering, too, from separation, anxiety, and the occasional existential dread. How might we move from separate and unequal primary metaphysical units to a primary metaphysical unity? How might we begin to see divinity in overgrown zucchini, desire in our divinities, or a singular dance of creation, organization, and destruction?

There's plenty of inspiration from which to choose. The worldview systems of first peoples across the continents share a legacy of metaphysical unity, a spirit that moves through all things. Pre-axial worldviews frequently have few lines of demarcation between the gods, humans, and nature. There are plenty of intermarriages between humans and divinities, divinities taking animal forms, and some of the oddest-looking characters one can imagine, including Ganesh, the Hindu elephant deity riding a mouse. But it is simultaneously a sacred and secular space where these two modes of being are open to all and available at every moment; where each moment in time, as Emerson observed, contains *every* moment in time.

Creation Hymn 129 from the *Rig Veda*,[3] a collection of Vedic Sanskrit hymns from ancient India, speculates that the universe begins with a seed, heat, and desire. The creator One is not some force outside nature, nor does it create nature out of nothing. Indeed, the author of this hymn suggests that the One itself came into being with its first desire to create. The desire arose first and linked the creator with the creation, so that both came into being together, in unison. *A co-creation, sparked by desire*. Desire is a force shared by all living beings, even if it is not always a conscious desire. It may exist even in those objects we call inanimate. The language here is perhaps metaphorical, but scientists talk about strong and weak "forces" and "attractions," and about energy as heat. What is the thermodynamic equivalent of the end of the world? Absolute zero. It is called "heat death." Nothing moves. No heat, no desire, no creator or creation. The author of that *Rig Veda* creation hymn was on to something.

> "It is preposterous and naive of me to suggest that we can heal the world and ourselves if we just build a conceptual collider big enough to fuse our metaphysical divisions into one living, creative, divine whole. … But it seems that less radical solutions are failing to do the trick and are sometimes making matters worse.

The first modern expression of metaphysical unity was written in a nearly incomprehensible format resembling a mathematical proof. It was considered so dangerous to express in seventeenth-century Europe that its author,

Benedict Spinoza, knew that it could be published only after his death. Spinoza claimed in a little book called *The Ethics* that there is only one substance in the universe. He dared to call it "Deus sive Natura," "God or Nature." Like the Vedic hymn discussed above, this singular substance has two aspects: the creator and the created. There is no creator distinct from its creation. They are identical. "God is no longer the transcendent creator of the universe who rules it via providence, but Nature itself, understood as an infinite, necessary, and fully deterministic system of which humans are a part."[4] Too radical for his time—and perhaps still too radical for ours—this metaphysical unification is what we are after.

> "Why bring divinity and the sacred into an already complex mix of politics and environmentalism at a time when global climate change points to a clock nearly out of time? Because there is little else that forces us out of thinking we are ourselves gods.

The American environmental movement from the early Transcendentalists to the current ecosystem theorists sees a basic unity in the world. Emerson's work is suffused with language that puts God into our world and our world into the divine. In proclaiming, "In wildness is the preservation of the world," Thoreau—much like the West's first philosopher, Thales—put the world on a new philosophical and metaphysical path.[5] Wildness is a real property—indeed, the essential property of a living, creative, spiritually and physically powerful world. It exists in and animates the objects of nature, humans, and even human creations, from farmer's fields to whole civilizations. The pine "family" on Spaulding Farm doesn't just turn on an ideal image of nature and wildness that is in us, as Emerson might say; rather it has this wildness in itself. "Nature is a personality so vast and universal that we have never seen one of her features. . . . They [the pines on Spaulding Farm] seemed to recline on the sunbeams." Not only do individuals and whole human societies depend on this wildness for their vitality, but those of us who understand its powers need to "go forth and reconquer this Holy Land from the hand of the Infidels."

John Muir liberated the bully God of his childhood by seeing divinity everywhere in the creation. Aldo Leopold spoke simply of "the Land" as a complex, interconnected community, with humans as mere citizens. Mathematician and philosopher Alfred North Whitehead proclaimed nature alive and created a rich, if complex, metaphysical system that merged mind and creativity into the whole fabric of the universe, from the micro "actual occasions" and the human "middle ground" to the macro swirl of actuality-potentiality, in a remorseless dance of change. It reminds me of the Hindu god Shiva's dance, representing both the destruction and the creation of the universe and revealing the cycles of death, birth, and rebirth. Whitehead conceives of God as a limiting factor, a boundary-maker, on this endless universal creativity.[6]

James Lovelock and Lynn Margulis's Gaia theory, named after the Greek earth goddess, describes the Earth as a complex, self-maintaining, living system that essentially keeps the planet life-friendly. Life itself manages to create the conditions conducive to life. It's co-creation right in our backyards.

Canadian ecologist Stan Rowe was more insistent. He exclaimed "Earth Alive!" and taught that the explanation of life is to be sought "outwardly and ecologically." The blue planet—the ecosphere—"integrates the organic and inorganic, and expresses life as well as harmonizing it with death in perennial cycles." Rowe uses words like "revivify" and "re-enchant," and like Leopold before him, believes that a cultural shift in language, beliefs, and commitments could "harmonize humans with their ecosystem homes, repairing the damage done to Earth and living things in general due to past ignorance."[7]

Finally, Wes Jackson's work on the Kansas prairie to perennialize the major grain crops is deeply informed by many of the thinkers discussed above, and by others, too, who seek to heal the divisions between humans and nature. Alexander Pope's phrase, "Consulting the genius of the place," is Jackson's guiding principle behind efforts to grow food in the way a prairie grows grasses. Nature is not to be subdued or ignored, but rather respected as a teacher with tenure and seniority. To see Kernza, the world's first perennial wheat grass, growing on the Land Institute's test plots is to see the union of human cleverness and nature's wisdom, wildness, and thirty-five years of plant breeding. Salina, Kansas is a long way from the Gulf of Mexico, but perennial agriculture is a first step toward healing this saltwater ecosystem and all of the connections along the way.[8]

This talking and thinking about a post-axial uni-

fication of our primary metaphysical units among philosophers and ecologists, even if sometimes metaphorical, can feel very strange to someone like me who, raised Catholic and serious about pursuing a religious vocation as a teenager, then rejected all things theistic and lived without God for thirty years. I was called instead to the philosophical and environmental work of repairing the frayed relationships between humans and nature. That's hard enough without bringing divinities into it. But that all changed three years ago on a dock along the Raquette River in New York's St. Lawrence river valley, while reading the *Bhagavad Gita*. That book and its description of Krishna, the god disguised as a chariot driver, rocked my philosophical foundations. I've since gained a new awareness of Indian philosophical thinking on the unity of the divine, the human, and the natural. It led me to the American Transcendentalists and Taoism, to Spinoza and Alfred North Whitehead, and to contemporary work in naturalistic or ecosystem metaphysics. Stuart Kauffman's latest book, *Reinventing the Sacred,* offers a view of God that is nothing more or less than "the very creativity of the universe."[9] The creativity in the universe *is* the sacred work.

If this is what a mid-life crisis feels like for a philosopher, then I'm happy to be having one! (Although I miss more than ever Strachan Donnelley, the founder of the Center for Humans and Nature, who was committed to seeing the world and all of its processes as a unified, organic whole. In this, his and our teachers are Heraclitus, Spinoza, Alfred North Whitehead, Hans Jonas, and Ernst Mayr, among others.) Why bring divinity and the sacred into an already complex mix of politics and environmentalism at a time when global climate change points to a clock nearly out of time? Because there is little else that forces us out of thinking that we are ourselves gods. And it speaks to a long history of metaphysical thinking about and experience with finding human worth and dignity alongside our non-human neighbors, who have similar worth and dignity, without humans having to demand the top spot.

It is preposterous and naive of me to suggest that we can heal the world and ourselves if we just build a conceptual collider big enough to fuse our metaphysical divisions into one living, creative, divine whole. Harder still would be to imagine a concept of the divine that was simply the creative energy of the universe. I hear Voltaire's voice at the end of *Candide* encouraging the characters to cease the speculative talk and tend the garden. And Buddha's warning that too much speculation can drive one mad. But it seems that less radical solutions are failing to do the trick and are sometimes making matters worse. History shows us that similar radical transitions have occurred before. Imagine how a singular, transcendent deity sounded to people who only knew their gods as local and fallible. The rise of monotheism across the Middle East and beyond was a cultural shift of very large proportions, and it took millennia to reach its current state. If we take a perspective that is wide and long enough, we can imagine, I think, Kauffman's images of God and the sacred operating right here and now, in us and in our midst.

We are at a critical time in human history. A new Axial Age is upon us, requiring some revolutionary thinking. Imagine a unified world and use desire and the creative quest for unity in your own lives and hearts to begin this healing process. The divine is real. Nature is real. The human experience is real. There is only one reality, and desire is its source. "See a world in a grain of sand, and a heaven in a wild flower; hold infinity in the palm of your hand, and eternity in an hour," writes William Blake. And Meister Eckhart: "The eye that sees God is the same eye that God uses to see us." It is a unity that connects Australian aboriginals with astrophysicists; poets and musicians with theologians and mathematicians; children with sages; chickadees and zucchinis with the divine.

Together they, we, it, speak of a world beyond our senses and our imagination: a divine, creative, living whole; an ordered universe of which we have only the slightest glimpse. But experience it we do, and it is awesome. It calls us to reverence, joy, and humility. And that's a start.

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NOTES

1 Adapted from a talk given at the Unitarian Universalist Church in Canton, New York, August 2010.

2 F. Ferré, *Being and Value: Toward a Constructive Postmodern Metaphysics* (Albany: State University Press of New York, 1996), 1.

3 http://www.sacred-texts.com/hin/rigveda/rv10129.htm.

4 http://www.iep.utm.edu/spinoza/.

5 http://www.bartleby.com/28/15.html.

6 See "Nature Alive," http://www.brocku.ca/MeadProject/Whitehead/Whitehead_1938/1938_08.html, and "God and the World," http://www.anthonyflood.com/whiteheadgodandtheworld.htm.

7 Excerpts from S. Rowe, *Earth Alive: Essays on Ecology* (Edmonton, AB, Canada: NeWest Press, 2006). The publisher rejected the use of an exclamation point in the title for reasons having to do with electronic bibliographic search engines.

8 Wes Jackson's latest book is *Consulting the Genius of the Place: An Ecological Approach to a New Agriculture* (Berkeley, CA: Counterpoint Press, 2010).

9 S. Kauffman, *Reinventing the Sacred: A New View of Science, Reason, and Religion.* (New York: Basic Books, 2008).

Humans, Nature, and Ethics

By GREGORY E. KAEBNICK

Does the idea of "nature" provide any kind of ethical touchstone to guide and to limit human impacts on ecosystems or the biochemical basis of life? And does the idea of "human nature" similarly provide any kind of moral structure to govern our use of biotechnological means to alter human beings? Many would say no to both questions too quickly, just as many others would too quickly say yes. I believe that we must take a more complex and nuanced position on these fundamental questions. To argue against something—such as human applications of biotechnology for enhancement of traits—because it will change human nature or is unnatural implies that we know what human nature is, when surely human nature is amorphous and slippery at best. The difficulty of pinning down human nature is one reason that attitudes about nature cannot be plausible unless they are limited and complicated.

In this essay, I argue that we may not need to know much about human nature to have moral concerns about changing it by means of biotechnology. Neither our conception of nature nor our conception of humanity need to be—or can plausibly be—essentialist and static. To attach moral significance to the conditions of our humanity, and to be wary of the technological manipulation of it, we do not necessarily need to specify exactly what it means to be human. We do not need to have a full theory of human nature in order to have moral concerns about changing it.

ESSENTIALIST VERSUS EVOLUTIONARY PERSPECTIVES

According to one influential philosophical tradition, to understand human nature is to grasp the essence of what it is to be human. As typically understood, an "essence" is the fundamental being or reality that a particular thing embodies. An essence explains the traits that a thing has. It is not reducible to those traits, however; it is unchanging and timeless. An essence has an existence of its own, and indeed it is, in a sense, more real than the items that partake of it. Further, essences are often held to relate things of different kinds to each other. An essence connects individuals into a larger class or kind; all the members of a given kind share an essence, and members of other kinds lack it. According to an ancient lineage of scholars whose work draws on Aristotle, a kind is what it is by rational necessity. It is part of this view that the overall universe is rationally ordered and necessary, and we can understand the order and necessity of the universe by grasping the essences that things in the universe embody.

However, essentialism is not the only way of understanding the concept of "human nature." An alternative view, now salient in all post-modern thought and very significant in the biological sciences, is nonteleological evolution, pioneered by Darwin. When applied to the study of human beings, an evolutionary view makes no claim for the rational necessity of human nature, or for its immutability and timelessness; nor does it claim that an account of human nature will show that human nature is rationally related to the rest of the universe. There need also be no requirement that what makes humans human is some

trait that the members of other species entirely lack. Typically, looking at traits allows one to recognize species, but the traits that allow us to recognize humans as humans might be found in some measure in other animals. And ultimately, in an evolutionary account, what really distinguishes species is not any claim about what traits characterize the members of the species, but the causal story that can be told about how the species appeared on the scene and how, through reproduction, it persists.

On an evolutionary view, then, "human nature" does not refer to an unchanging essence. Instead, it describes functions; it tells us what the members of the kind happen to be like. From this perspective we should expect to better understand human nature by studying our taxonomic neighbors, as Mary Midgley argues in *Beast and Man*. What distinguishes human beings from other animals is typically held to be their possession of various capacities related to cognition, such as language, rationality, tool-making, morality, and culture, but there is no need to establish that any of these capacities are possessed *only* by humans; indeed, the evidence is mounting that they are capacities or extensions of capacities that animals also possess in differing forms and degrees. At the same time, as Midgley also emphasizes, we need not restrict ourselves to biology to learn about human nature. We will have to study humans sociologically and anthropologically, as Paul Ehrlich does in *Human Natures: Genes, Cultures, and the Human Prospect,* in which he argues that there is no unitary account of human nature, and that, given the significance of culture in human ways of living, there are instead multiple human natures.

Moreover, the idea of "human nature" can refer both to how individual human capacities are acquired and to general claims about human capacities. Human bodies and faces tend to look a certain way, and that is a fact of nature. But there is also a surprising degree of variation, and that, too, is a fact of nature. Plainly, there is no single, overarching definition of "nature" that applies to all of the ways in which the term is used and always shows clearly what the correct usage is. However, both in rejecting the essentialist understanding of "human nature" and in allocating only a limited role to assertions about human species norms, we shift the focus from general claims about what human beings are like to a recognition of diversity, complexity, and individual variation. To do so is to give up pretensions to a commanding knowledge of what human beings are really like.

HUMAN NATURE AS THE BASIS FOR MORALITY

The moral concerns people have about modifying human nature are also various. Like the different views about what a concept of human nature is, views about the connection between human nature and moral value can have diverse implications for what one knows about human nature.

Here I want to consider the view that the concept of human nature represents the very foundation for morality. This view implies that, if our understanding of human nature was erroneous or incomplete, then many of our moral judgments would be unreliable. Everyone agrees that an adequate understanding of human nature is necessary in order to ensure that moral judgments square with the facts on the ground. For example, if we recommend punishment because we believe that it helps people rehabilitate themselves, but that belief is mistaken, then our judgments about punishment are unreliable. Our values lead to specific moral positions only in light of premises concerning relevant facts. But if human nature is understood as the very basis for morality, then our moral judgments may be wrong not only on factual premises but on values premises as well. Thus, to the extent we think we know what our values are, we must have a command of human nature.

> "Kass thinks… that the cosmos is rationally ordered; that humans—highest of the higher organisms—have their proper place in the overall order; and that understanding their nature is …a matter of …gaining special insight into larger mysteries.

Leon Kass is often thought to provide a clear example of this way of thinking about the moral relevance of human nature. Kass himself explicitly denies this view.[1] Moreover, his method is not what one would expect if this were his view. The natural method for basing moral guidance directly on human nature would be first to set out an account of human nature and then to apply it as needed, but Kass's method is typically to start by considering questions of meaning. In a chapter about the creation of human embryos in the laboratory, the philosophical discussion begins with a section subti-

tled "The Meaning of the Question," and Kass explains that his "orientation" is "that before deciding what to do, one should try to understand the implications of doing or not doing."[2] Kass then connects these, not to an account of human nature, which would offer various claims about what humans *are*, but to the "idea of humanness," which is a question of how we think about ourselves—a topic for poetry as much as for science.

> "...if biotechnology can significantly change human capabilities and life trajectories but is not available to most people, then it risks undermining our common sense of humanity...[and] the capacity for human sympathy.

This method seems to commit Kass only to a limited theory of human nature. He is making claims about what is species-typical for humans, but the claims do not amount to a complete account of what is human and what falls outside the category. Moreover, many of the claims he offers are about such basic features of human life—sexual procreation, growing old, and passing away—that they encompass not only all humans but all animals. Kass's theory is best rebutted not by challenging his theory of human nature but by challenging the claims he makes about its moral relevance.

Nonetheless, there are glimmers in Kass's writings of a grander vision. He has a tendency, for example, to speak broadly of human nature as a kind of touchstone or guiding light in thinking about biotechnology. "Beyond Therapy," a report from the President's Council on Bioethics and heavily influenced by Kass, asserts that "only if there is a *human* 'givenness,' or a given humanness, that is also good and worth respecting, . . . will the 'given' serve as a *positive* guide for choosing what to alter and what to leave alone."[3] Also, it is striking that Kass reaches skeptical conclusions about enhancement every time he considers it; though the method is case by case, the underlying agenda is general. If human nature is not a straightforward moral guide, it nonetheless provides something close to a guide. Finally, there is an undercurrent in Kass's writings of essentialism. Kass emphasizes the limits of science and empiricism and the room, and need, for alternative ways of apprehending human life. "Our current evolutionary orthodoxy," he notes, "has, in fact, little to say about the true origin of life or about ultimate causes, not only of life but of all major biological novelty. It cannot account for the emergence of higher organisms." We need to turn, Kass tells us, to "unorthodox biologists," and in particular to Aristotle, "who emphasized questions of being over becoming, form over matter, purposiveness over moving parts, and wholes over parts; for whom the soul was not an ethereal spirit or a ghost-in-the-machine but an immanent and embodied principle of all vital activity; and for whom science was a refined and ever-deepening reflection on the natures and causes of the beings manifest to us in ordinary experience."[4]

It is hard to read such passages without concluding that Kass thinks, at some level, that the cosmos is rationally ordered; that humans—highest of the higher organisms—have their proper place in the overall order; and that understanding their nature is not merely a matter of collecting observations about what humans are like, but also of gaining special insight into larger mysteries.[5] These grander ambitions for deploying the concept suggest a commitment to a much stronger theory of human nature than Kass ever attempts to provide.

HUMAN NATURE AS A CONDITION OF MORALITY

> "...certain ways of using enhancement lead to an imbalance in two sorts of relationships to human nature—an accepting relationship, in which we see nature as a gift, and a perfectionist relationship, in which we strive to improve it. The ideal is to hold these in tension with each other...

Another way of thinking about the moral relevance of human nature is to see it as a logical requirement of (human) morality. Francis Fukuyama takes this approach. Fukuyama is also the clearest case of someone opposed to enhancing human nature who rests the argument on an overarching theory of human nature. Fukuyama famously claims that human nature "is the sum of the behavior and characteristics that are typical of the human species, arising from genetic rather than environmental factors."[6] Thus, humans are distinguished by an overall set of traits, rather than by any one trait; Fukuyama does not

attempt a complete list. In fact, the set would have to be somewhat indeterminate, if only because any attempt to specify "fundamental facts" tends to be indeterminate. Further, the set will consist of ranges of traits rather than precisely specified traits. Because traits are a function of environmental as well as genetic factors, the set of traits "arising from genetic factors" will be unstable; "normal human height," for example, can change over the generations due to changes in diet. Nonetheless, out of this overall general understanding of the range of traits possible given the human genome emerges what is distinctively human, which Fukuyama calls "the human essence" or "Factor X." This is not itself a trait but an emergent property that depends on the entirety of human traits. Thus, though Fukuyama holds that human nature is definable, he does not hold that we can easily articulate human nature:

> "The point of giftedness is that we do not know exactly what to expect in human nature, so we should foster … an "openness to the unbidden."

> If what gives us dignity and a moral status higher than that of other living creatures is related to the fact that we are complex wholes rather than the sum of simple parts, then it is clear that there is no simple answer to the question, What is Factor X? That is, Factor X cannot be reduced to the possession of moral choice, or reason, or language, or sociability, or sentience, or emotions, or consciousness, or any other quality that has been put forth as a ground for human dignity. It is all of these qualities coming together in a human whole that make up Factor X.[7]

Fukuyama's problem with enhancement technologies is that if we shift human nature beyond the pale of the traits that our genes make possible, then we will disrupt our understanding of human dignity and, therefore, of human rights. Given his understanding of "the human essence" as emergent from the overall set of human traits, Fukuyama maintains a broad opposition to enhancement. "What is it we want to protect from any future advances in biotechnology? The answer is, we want to protect the full range of our complex, evolved natures against attempts at self-modification."[8] In other words, it is not only language and rationality but also the entire set of behavioral and physical characteristics that concerns Fukuyama.

I believe that the core problem with Fukuyama's argument is that he attaches value primarily to human species norms, with the added complication that he sees the norms as established genetically. We have to be able to enumerate the traits we must watch, fix their appropriate ranges, and sort out the genetic contribution to them. But getting a handle on all this—and then sorting out the genetic versus the environmental contributions to the traits we choose to track—has proven difficult. Another weak spot is Fukuyama's flirtation with essentialism. His broad and stringent set of traits that should not be genetically modified amounts to an attempt to define decisively what falls into the human category and what falls outside. But this will give some perplexing results.[9] It may imply, for example, that Shaquille O'Neal, whose height is certainly anomalous, is not fully human. Fukuyama is aware of this danger, and he takes pains to emphasize that traits vary greatly and that gene-environment interactions can shift the entire range of traits over time. In that case, however, enhancement that does not bump a person beyond the range of normality might be unobjectionable, and enhancement that shifts someone outside the range of normality might not *always* make human dignity and human rights inapplicable. Enhancement would seem to pose a problem only when it occurs often enough and dramatically enough to pull apart the statistical curves that describe normal ranges of human traits. It is broad social trends that we are really concerned about, not individuals.

A nonessentialist version of Fukuyama's general approach seems possible. Paul Lauritzen argues that if biotechnology can significantly change human capabilities and life trajectories but is not available to most people, then it risks undermining our common sense of humanity, which could undermine the capacity for human sympathy.[10] The starting point for this thought is that human identity is bound up with human biology, such that "a new biology might give rise to a new psychology." A new psychology would lead, in turn, to a new ethics. In particular, worries Lauritzen, it would challenge our conception of human rights. "The most persuasive account of human rights," he writes, "is framed in relation to the notion of a stable human nature." The fear, then, "is that biotechnology will change the species-typical characteristics shared by all humans. If that happens, and if rights are tied to

a conception of human nature that is in turn rooted in a biological reality, then biotechnology threatens the very basis of human morality as we know it."

In Lauritzen's view, then, it is critical to human morality that there is a stable human nature and that humans all recognize that there is a stable human morality. Lauritzen is not concerned with determining what is inside and what is outside the human category. His point is only that we must have some ability to describe important human characteristics that people of different races, ethnicities, sexes, and nationalities share in roughly the same measure.

THE RELATIONSHIP BETWEEN HUMANS AND NATURE

Another way of arguing for the moral significance of human nature is to argue that a certain kind of relationship to it is morally significant. Michael Sandel and Jürgen Habermas exemplify this approach. Sandel argues that a certain relationship to human nature is both valued in itself and vital for various things that we value in human society, and Habermas claims that a certain relationship to human nature is vital for equal membership in the moral community.

Sandel's argument for worrying about enhancement is broad ranging, and in places he seems to develop arguments that follow consequentialist lines. His primary argument, though, is that certain ways of using enhancement lead to an imbalance in two sorts of relationships to human nature—an accepting relationship, in which we see nature as a gift, and a perfectionist relationship, in which we strive to improve it. The ideal is to hold these in tension with each other, but enhancement pushes us away from the first and toward the second. Widespread use of enhancement would "represent the one-sided triumph of willfulness over giftedness, of dominion over reverence, of molding over beholding."[11]

Sandel goes on to say why losing "the ethic of giftedness" would be unfortunate. Losing the ethic of giftedness would undermine "three key features of our moral landscape--humility, responsibility, and solidarity." This claim could be understood as a consequentialist point—if we lose these key constraints on our behavior, many people will end up worse off—or it might be understood as pointing out conceptual implications—if we lose these aspects of the "moral landscape," we could not but feel that as a huge loss. Sandel plainly hopes, though, that many of his readers will feel the loss of giftedness itself already as a loss. It is partly to show the import of losing giftedness itself that he tries to show how it is bound up in sports and in parenthood, such that if we lose the ethic of giftedness, then sports and parenthood will be diminished—"the drive to banish contingency and to master the mystery of birth diminishes the designing parent and corrupts parenting as a social practice governed by norms of unconditional love."[12] Sandel's argument is not limited to sports and parenthood, however; he intends these discussions to exemplify a larger point about giftedness.

For my purposes, the important point is that Sandel can speak of the human relationship to bodily nature without making any overarching claim about human nature itself, other than that the traits people have depend on the bodies they have, and that traditionally people have acquired their bodies—and, therefore, their traits—through contingent processes rather than through design. The point of giftedness is that we do not know exactly what to expect in human nature, so we should foster what Sandel, borrowing from William May, calls an "openness to the unbidden." But such claims fall well short of a theory of human nature.

Contingency is also critical in Habermas's case against enhancement. We are able to live together in communities and engage each other as equals because we all share some sort of "prior ethical self-understanding"—an understanding of who we are that makes it possible for us to see ourselves as "ethically free and morally equal beings."[13] The critical element in this self-understanding is an awareness that we are embodied and that our bodies are our own, in the sense that we do not acquire them from other people; they are products of fate or nature rather than of other members of the community. In short, the contingent nature of a person's traits is a condition of being one's own person—of having autonomy, having unique worth, and being a member of equal standing in the moral community. We must be

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able to assume that "we act and judge *in propria persona*—that it is our own voice speaking and no other."[14]

Habermas worries that this assumption is at risk if a child knows that she has been genetically enhanced by her parents, for then the parents' goals are present directly in her body. The processes of childrearing and socialization may also impose the parents' goals on the child, but the child can in principle reject these, and Habermas supposes that such goals will not be present in the child's body in the same way. Of course, the child might accept her parents' goals as her own, and if she does, she will not feel deprived of her own voice. But because we cannot be sure that children's and parents' goals will harmonize, genetically enhancing children "jeopardizes a precondition for the moral self-understanding of autonomous actors." Thus, parents should approach parenthood with an "expectation of the unexpected."[15]

Whether either Sandel's or Habermas's concerns are ultimately persuasive depends on pursuing moral and political questions that lie beyond the scope of this essay. Sandel's argument could be understood simply as identifying and defending a personal moral ideal, one that many people share and that Sandel wants to recommend, but that he would not seek to enforce through public policy. Habermas, however, must be aiming at public policy. To wrongly prevent some people from joining the moral community is to commit a grave injustice that must be opposed by law.

Both positions rest on claims about human nature that are modest and defensible. Neither is making any claims about human beings' essential nature. Nor are they arguing that a normal human range of traits is what we value. Rather, it is the *relationship* of each person to his or her own nature that Sandel and Habermas are concerned about.

The key point Habermas wants to make is that to be a person is to exist in a body that is one's own and is not the directed creation of other people (or of the community as a whole). The bodies of free and equal persons do not incorporate the intentions of other members of the community. To establish this concern and perspective, Habermas need not thoroughly catalogue the traits that make up human nature, nor come up with a *definition* of human nature that sets out a criterion for those traits. Further, Habermas's emphasis on contingency does not imply that human nature is fixed. It might indeed change, but the change must itself be contingent. Natural evolution seems acceptable, for example. The constraint Habermas would impose is only on how the change occurs; some members of the community should not be able to deliberately intervene in the bodies of other members.

The complexity of the genes' contribution to actual human life may qualify Habermas's and Sandel's concerns about modifying children. Parents' success at using genetic technologies to *make* their children turn out one way rather than another is likely to vary greatly, depending on what traits they have in mind for their children, and it may well be that a majority of the traits parents would want to produce lie beyond genetic control. It does not take complete success at controlling a trait to raise concerns, however. Completely controlling a trait might be the limit case. Habermas would be troubled if an intervention falls short but leaves a lasting reminder for the child, *on* the child, of what the parents wanted the child to be. Sandel's worry that the child is not regarded to a sufficient degree as a gift depends on the parents' attitudes, which (Sandel supposes) depend in part on parents' capacity to carry out their own plans. But parents might fail to regard a child as a gift even though they have little or no ability to modify the child's given traits.

If concerns about genetic interventions are explained in terms of parents' attitudes and children's self-understanding, then plainly there is no sharp line demarcating genetic from environmental interventions. To the degree that an environmental change leaves a permanent reminder of the parents' own intentions for the child (consider surgery to Westernize the eyes of an Asian child adopted by Western parents), it ought to generate both Habermas's and Sandel's concerns every bit as much as it would if accomplished through genetic intervention. The genes are not special repositories of value. The point is rather that the relationship in which we stand to human nature(s), and to the natures of our children, is a matter of human value.

CONCLUSION

Moral views about human nature, even if widely shared, might not be the kind of thing we think suitable for legal enforcement. Perhaps the moral attitude toward human nature is a kind of *ideal* one holds for the relationship between humans and nature. It might be similar in ways to some ideals we have for relationships between humans, such as that a person tends to treat others with warmth or generosity. Such an ideal would not issue in blunt pronouncements that something is right or wrong, permissible or impermissible.

For a person who holds it, it would be action-guiding, and that person might think better of other people who demonstrate it—indeed, we might still think it an important feature of the moral life—but at the same time, we would not expect everybody to have it, and we would stop well short of thinking that people who lack it are to that degree *immoral*. They just do not live up to a standard we set for ourselves.

Perhaps, too, this gives one final reason that one need not have a full theory of human nature to have moral qualms about altering it. If a liberty-restricting government policy on, say, research into human cloning rests on claims about human nature, then the requirement that those claims be publicly accessible and assessable raises the bar for whatever we might claim about human nature. A publicly enforceable moral standard would require a convergence of opinion about human nature, a collective weighing and sifting. A personal moral standard can be based on one's own considered assessments, and perhaps even on one's own best guesses.

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NOTES

1 L.R. Kass, *Life, Liberty, and the Defense of Dignity: The Challenge for Bioethics* (San Francisco, CA: Encounter Books, 2004), 296.

2 Kass, *Life, Liberty, and the Defense of Dignity*, 85.

3 President's Council on Bioethics, *Beyond Therapy: Biotechnology and the Pursuit of Happiness* (Washington, DC: President's Council on Bioethics, 2003), 289.

4 Kass, *Life, Liberty, and the Defense of Dignity*, 288, 294.

5 Kass, *Life, Liberty, and the Defense of Dignity*, 296. Kass emphasizes the importance of mysteries here.

6 F. Fukuyama, *Our Posthuman Future: Consequences of the Biotechnology Revolution* (New York: Farrar, Straus & Giroux, 2002), 130.

7 Fukuyama, *Our Posthuman Future*, 171.

8 Fukuyama, *Our Posthuman Future*, 172.

9 Cf. N. Agar, *Liberal Eugenics: In Defence of Human Enhancement*, (Oxford, U.K.: Blackwell, 2004).

10 P. Lauritzen, "Stem Cells, Biotechnology, and Human Rights: Implications for a Posthuman Future," *Hastings Center Report* 35, no. 2 (2005): 25-33.

11 M. Sandel, *The Case against Perfection: Ethics in the Age of Genetic Engineering* (Cambridge, MA: Belknap Press of Harvard University Press, 2007), 85.

12 Sandel, *The Case against Perfection*, 82-83.

13 J. Habermas, *The Future of Human Nature* (Cambridge, U.K.: Polity Press, in association with Blackwell, 2003), 38-41.

14 Habermas, *The Future of Human Nature*, 57.

15 Habermas, *The Future of Human Nature* , 63, 58.

REVIEWS & REFLECTIONS

RE-ENCHANTING LIBERALISM: ON THE PROSPECTS OF CIVIL RELIGION

Bruce Jennings

It is time to turn the page and open a new chapter in our collective autobiography—our story about the modernization, materialization, and secularization of the good human life out of which Enlightenment culture and political liberalism were born. We must rethink the relationship between religion and political power and come to see enchantment (imagination and wonder) and enlightenment (reason and control) not as antithetical but as complementary and mutually essential for a new ecological worldview.

The philosopher Charles Taylor has perhaps done more than anyone recently to think through this complexity and conundrum, as his magisterial recent work, *A Secular Age*, attests. In an earlier essay with the splendidly ambivalent title "A Catholic Modernity?" Taylor explored both the tensions inherent in what I am calling enlightenment and enchantment, and their essential, although not always perceived, interconnections.

At one level Taylor is concerned with the question of how the Roman Catholic faith can come to grips with the challenge of secular modernity. Yet on another level, he is equally concerned with the question whether the culture of modernity itself—with its rationalism, scientific worldview, technological power, individualism, tolerance, diversity, and separation of church and state—can offer a new kind of "catholic" (universal) faith. In other words, can we find a "civil religion"—a faith of universal rights and values grounded only on humanism, without any form of transcendent theism whatever—at least as far as the public realm is concerned?

Taylor's answer is no. Modernity and secularization are insufficient: the faith of humanism is incomplete without something beyond man to worship. But at the same time, the faith (or is it an anti-faith?) of humanism is essential. Without secularism and modernity, Taylor argues, "the project of Christendom," which he defines as "the attempt to marry the faith with a form of culture and a mode of society," would never through its own unfolding have come to affirm universal human rights. He then poses the question in a most fruitful and daunting way:

> The very fact that freedom has been well served by a situation in which no view is in charge—that it has therefore gained from the relative weakening of Christianity and from the absence of any other strong, transcendental outlook—can be seen to accredit the view that human life is better off without transcendental vision altogether. . . . The strong sense that continually arises that there is something more, that human life aims beyond itself, is stamped as an illusion and judged to be a dangerous illusion because the peaceful coexistence of people in freedom has already been identified as the fruit of waning transcendental visions. To a Christian this outlook seems stifling. Do we really have to pay this price—a kind of spiritual lobotomy—to enjoy modern freedom?[1]

An interesting attempt to explore Taylor's provocative question has been made by an intellectual historian, Mark Lilla. Lilla is a perceptive guide to the vicissitudes of grand theorizing in the twentieth century—the domain where metaphysics, political philosophy, and theology embrace, clash, and morph into one another. His book, *The Stillborn God: Religion, Politics, and the Modern West* (2007), carries us through vexed intellectual and political landscapes with clarity and insight.[2] (Lately, indeed, there has been a virtual intellectual explosion of new work on theology and politics, a perennial subject rendered more focused, raw, and edgy in recent years by both the rise of the religious right in American politics and the global recru-

REVIEWS & REFLECTIONS

descence of religious fundamentalism and militancy.[3])

We think that the Establishment Clause is written in the nature of things. It isn't. It is written in ink that hadn't even dried until after World War II. We think that increasing material wealth, economic growth, and the consumption-oriented life, not to mention the scientific and free-thinking education that goes with a rising standard of living, will inevitably convince people to regard belief and faith as superstition. They won't.

The intellectual history Lilla narrates is essentially that of political philosophy from the sixteenth century on. The backdrop of Lilla's narrative is the Latin middle ages. The political theology reflected in the medieval Roman Catholic social order and feudal kingship was not without its internal contention and strife, to be sure, but it was a consistent, logical system, rooted in Biblical Christianity, that functioned for a long time. Lilla drives home this point, lest we are facile enough to think that any society dominated by a hegemonic political theology of that kind is necessarily politically unstable and transitory. It was a simple, even rudimentary society from a technological and economic point of view, but politically it was not obviously or unarguably inferior to what has followed it for the past five hundred years. Ecologically speaking, it was a more benign and sustainable way of life than what has followed, perhaps because its religious worldview tended to suppress the rapacious scientific, technological and economic systems that the breakdown of this worldview unleashed. (The converse is no doubt also true: their rise led to its breakdown.)

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Lilla packs a remarkable amount of detail covering five centuries into his account, but he gives rather short shrift to a number of elements. What is glossed over is worth noting and may be as important as what he chooses to emphasize.

One factor is nationalism—the creation of the modern nation state and the formation of imagined communities that have followed in the wake of this remarkable phenomenon. Another element is the Renaissance and the stirrings of a new sensibility of individualism and skepticism in Western European culture. Finally, perhaps most important of all, is the rise of modern science, with its materialistic and mechanistic world picture. This not only made modern technology and capitalistic economies possible, it also began the erosion of the Christianized, Aristotelian understanding of reality. Modern science turned nature into a different reality—one that is a field of forces, not the mirror of the Logos nor the Mind of God. It is not meaningful per se, and it is not teleological or eschatological. It is not going anywhere, and it is neither good nor evil. Nature is to be used, not sounded for clues to deeper meanings.

The story proper of modern political thought begins with the Reformation, and the terrible religious warfare of the fifteenth and sixteenth centuries. The pivot point of Lilla's narrative is the secularization of modern political philosophy, what he calls the "Great Separation." This is the separation of church and state, religion and politics; the cleaving of political theology, de-sacralizing the latter and privatizing the former.

Very interestingly, and I think justly, Lilla places Thomas Hobbes at the root of this transformation. Hobbes, horrified at the century of warfare that came before and at the continuation of it in the English civil war that was bringing his own world down around his ears, redefined sovereignty. It is not about God, it is about man. Not about what really is, but about what we can hope to know. The prime mover in human life is insecurity: "The passion to be reckoned on,"

REVIEWS & REFLECTIONS

Hobbes said, "is fear." We turn to religion not because we can know it is the truth (we can't), but because it promises security and peace. In the 1640s, it had not been making good on that promise. Indeed, he considered it a con game perpetrated by "ghostly men" who hoodwinked the people for their own advantage. What is that advantage, and what is the solution? Power. Consolidate political power, harness fear to productive, orderly ends, and the *novus ordo seclorum* will emerge. Political theology will be replaced by political science—that is to say, political geometry and mechanics. Church and state are separate.

To be sure, the Great Separation did not catch on right away. But gradually it has become the intellectual basis for liberal democracy, as Hobbes's insights have been appropriated into mainstream liberalism, domesticated, as it were, by milder thinkers from James Madison to Robert Dahl and David Gauthier, among many others in contemporary philosophy and political science.

Within a century an equally powerful counterpoint to Hobbes had arisen. The principal counterpoint to Hobbes is Jean-Jacques Rousseau, the strongest successor to Hobbes in the social contract tradition. Rousseau protests the transposition of religion into power for two reasons. First, because he has a different philosophic anthropology than Hobbes, a different theory of human nature. For Rousseau human beings need religion (a sense of the transcendent) because they are fundamentally progressive, developmental beings with a built-in logic of moral and spiritual growth (that can also spiral downward into degeneration), and not fearful beings, frozen in a petrified, universal Hobbesian present. The second reason is that without a sense of the transcendent and the moral and with only a desire for power and order, human existence will remain mean, nasty, and impoverished, if not altogether brutal and short.

Rousseau concluded that Hobbes's solution would not work and that politics needs theology, although he in fact agreed with Hobbes and the Great Separation on the idea this must come through a "philosophical" political morality—a political philosophy of reason, not a political theology in the traditional sense. But how did Rousseau try to deal with the flaw that he identified in Hobbes? If the answer to the problem of political theology, with its threat to life, liberty, and the pursuit of happiness, is not the Great Separation, then what is the correct answer? Rousseau's answer may not be workable, but it cannot be ignored today either. His answer was his notion of civil religion and his concept of the general will (*volunté générale*).

"Rousseau concluded that Hobbes's solution would not work and that politics needs theology, although he in fact agreed with Hobbes and the Great Separation on the idea this must come through a "philosophical" political morality—a political philosophy of reason, not a political theology in the traditional sense.

Rousseau was a political theorist who took democracy seriously—one of the few, in fact—but he was not a majoritarian democrat. He explicitly differentiated the general will from what he called "the will of all" (*volunté de tous*). The general will is a normative concept, not a numerical or procedural one. It has to do with the spirit, the intention, the moral orientation of the will of a political community. It is subject to ongoing and interminable interpretation. Indeed, Rousseau's conception of citizenship is precisely the deliberative activity of interpreting the general will. He is a hermeneutical democrat.

Rousseau did not adequately develop the implications of his ideas about the general will or civil reli-

REVIEWS & REFLECTIONS

gion, nor did he or provide institutional details to capture and contain his political vision. One wishes that he had had a bit more of James Madison's genius in him. But it seems to me reasonably clear that he did not understand the general will as a concept that could ever justify the repression of single individuals or minority groups. He surely would have been horrified by the holism of the political metaphysics of fascism and National Socialism, for example. Besides, in liberal democracy, operating under the principle of the separation of church and state, we still cannot entirely escape the democratic hermeneutic, for we still must discern what the public interest or the common good requires in order to establish the moral underpinnings of public policy.

The kind of political order within which human beings can fulfill their moral and spiritual potential—which Rousseau called a "republic"—requires a sense of community and a deliberate, reasoned commitment to serve and sustain the common good that one shares with others in the political community. Like Hobbes before him, Rousseau believed that there needs to be a consolidated power or authority to hold the political community together. But for Rousseau this consolidated power, this Sovereign, does not rule on the basis of fear or calculated self-interest; it rules by moral conviction and conscience. And for Rousseau the Sovereign is not a person or even a body of persons: it is not a king, a parliament, or a democratic assembly. It is the moral spirit, the driving force of a political culture and a way of life.

Much of what keeps this commitment to the common good or general will alive is the activity of republican citizenship itself—active, interested, engaged, caring. But Rousseau (who was not an optimistic thinker) did not think that the praxis of citizenship alone would be enough. In the first place, he felt that it would be necessary to sustain it with a domestic sphere based on the influence of a strong matriarch, a "republican mother," whose family-centered role left her no time and no place in the male-dominated public sphere, but whose cultural function was deeply and fundamentally political.

Moreover, he felt that it would have to be sustained by the institution of a civil religion to which all citizens (both *citoyens* and *citoyennes*) would have to profess their belief, regardless of what their other, private religious beliefs and practices might be. Rousseau nowhere assumes, much less argues, that private religion will wither away. But he was keen to keep it subordinate to a higher public religion, a religion of commonality and the good of life.

Rousseau never wrote a theology for his civil religion. Indeed, rather like Robert Bellah in our own time, he approaches it more from a sociological than a theological point of view. This was not adventitious on his part: theological elaboration of the civil religion was precisely what he did not want, for that was what

REVIEWS & REFLECTIONS

led religion either to merge with political sovereignty (forming a theocracy) or to set up a kind of state within the state—a rival sovereignty that undermined the unity that Rousseau was seeking above all, in both the political community institutionally and in each citizen psychologically.

Rousseau changed the question from, "Why does religion have to be made private?" to "How can religion be made civic?" That is to say, his was a religion that offered people what they yearned for in terms of transcendent meaning and spiritual fulfillment, but it did so under the terms and conditions of what we would now call "human rights," especially equality of civic respect and toleration.

From what little he says about it, one must infer that Rousseau's conception of civil religion was exceedingly thin theologically. As citizens he asks us for only a few abstract beliefs, a sparse catechism, without commentary or theology to develop them. Why this odd requirement? Evidently so that each person inwardly could supply his or her own content.[4] But that inward content has nothing to do with the public sphere where solidarity, not difference, must prevail. It is not the believer, but the *intolerant* believer that the political community cannot tolerate. Citizens may disagree with one another's religious beliefs, but they cannot reject one another morally or ontologically—viewing others as non-persons—because of those beliefs. Rousseau was convinced that such intolerant sentiments and people must be excluded from the citizenry due to the grave danger they posed to it. Here is what he tells us about his conception of civil religion:

> The dogmas of the civil religion ought to be simple, few in number, stated with precision, without explanations or commentaries. The existence of a powerful, intelligent, beneficent, foresighted, and providential divinity; the afterlife; the happiness of the just; the punishment of the wicked; the sanctity of the social contract and the laws. There are the positive dogmas. As for the negative ones, I limit them to a single one: intolerance. . . . one should tolerate all those [private or personal] religions that tolerate others insofar as their dogmas are in no way contrary to the duties of the citizen. But whoever dares to say there is no salvation outside of the church should be chased out of the State.[5]

This is indeed a religious law that can be recited while standing on one leg, and there is no commentary. But where does it come from? Not from visionaries or a priestly class. It is the distillate of a culture and a tradition; it comes from the moral learning of enduring ways of life, molded like a dynamic ecosystem across time and generations in response to changing landscapes and challenges. A civil religion is in constant dialogue with human becoming.

"Rousseau changed the question from, "Why does religion have to be made private?" to "How can religion be made civic?" That is to say, his was a religion that offered people what they yearned for in terms of transcendent meaning and spiritual fulfillment, but it did so under the terms and conditions of what we would now call "human rights," especially equality of civic respect and toleration.

Rousseau tropes this as a personification; the source of civil religion is the figure he calls the "Lawgiver" (*le Législateur*). He has in mind the ancient examples of Moses, Lycurgus, and Numa. Rousseau's Lawgiver does not found the political system, he founds

REVIEWS & REFLECTIONS

the culture, the manners and morals, upon which the ideal political system will later depend for its proper functioning and sustainability. The Lawgiver founds the implicit values upon which a community of human self-realization can be founded; a civil religion does not merely or even primarily codify those values so much as it provides a form of practice that can embody those values in the lives of the citizenry. Having no power in his own right, the Lawgiver forms the shape that political power will take.

This brings us to Lilla's concluding thoughts. He underscores how unusual and even weird the Great Separation of the liberal democratic West is in the world today. He sees in the United States the only example where an energetic and pervasive religious sensibility and culture has flourished alongside an equally deep commitment to the Great Separation. In a companion essay to *The Stillborn God*, entitled "The Politics of God," he writes, "it is only thanks to a strong constitutional structure and various lucky breaks that political theology has never seriously challenged the basic legitimacy of our institutions. Americans have potentially explosive religious differences . . . yet they generally settle them within the bounds of the Constitution. It's a miracle."[6]

For the most part liberalism has chosen to protect people from evil and harm rather than to make them good. And yet, we know that liberalism is just wrong in its atomistic individualism and in its belief that society can be a morally neutral space—that it can avoid, in one way or another, the moral transformation of it members. There is something skewed about the notion that we must not engage in ontological discourse in the face of diverse and incommensurable fundamental beliefs, or that there is no civic possibility for any consensus about how we ought to live morally—how we ought to treat one another and non-human nature. We need a civic religion of the common good, of the land, and of rights and the law.

In the United States, our public religious discourse is remarkably skewed in favor of socially and economically conservative voices, but then our public secular discourse is skewed in that direction, too. However, the national media culture may give one a mistaken impression about the moral and spiritual pulse of America. Something much more akin to Rousseau's civil religion—a theology of caring, love, social justice, and human rights—is articulated within houses of worship every week, as well. And this Word, which does not lobotomize the spirit, is also living outside the overtly religious venues of our civil society, especially in grassroots organizations that derive from the combined religious and social movements of our time, advocating for civil rights and justice for the underserved and the disenfranchised, and stewardship and conservation for the natural world.

> "But where does [religious law] come from? Not from visionaries or a priestly class. It is the distillate of a culture and a tradition; it comes from the moral learning of enduring ways of life, molded like a dynamic ecosystem across time and generations in response to changing landscapes... A civil religion is in constant dialogue with human becoming.

The voices that understand how to combine enchantment and enlightenment–a sense of the sacred and the transcendent with democracy, tolerance, diversity, and personal liberty–should be more prominent in the public square.

Civil religion did not die with Rousseau. It has lived a back-channel existence, flowing like an underground stream in our political culture. One of its core tenets is our blindness toward and neglect of creation. Both politics and religion are social phenomena in the sense

REVIEWS & REFLECTIONS

that they create imagined worlds and meaningful symbolic structures for looking upward and outward in the world of human beings. Religious disputes about the rules of human living are remarkably inattentive to the natural world where that living takes place. We are so concerned about what the Creator wants us to do, we forget about the Creation, which is both the setting and the precondition for the possibility of our imaginary, meaning-making, and cultural doings.

Can it be that the vertical dimension of being is bisected so that human connections downward, with the earth, have no bearing on our relationships upward, with the divine? Can it also be that they have no bearing on our relationships sideways, with our fellow human beings—our connections of justice, caring, and community?

I do not believe that. The arm of our moral and spiritual compass is not bisected but continuous. History seems to teach that politics can be infinitely plastic and malleable. Political theology can bend politics to its will—at great human and moral cost perhaps, but morality never seems to say, "Enough." Nature can and does say, "Enough." Unlike politics and human rights, ecosystems can only be abused up to a certain point. Of course, individual human beings die of torture, neglect, and mistreatment, and whole peoples can be extinguished by genocidal violence. But it seems that no form of moral pollution is fundamentally incompatible with human life and human survival as such. In extreme cases, environmental pollution and ecosystemic degradation are. When we degrade them, we undermine the very foundation of our biological existence.

Rousseau's notion of a flourishing politics, ethics, and religion most definitely included the downward vertical connection. If we cannot become fully human in the absence of a right relation to the sacred and a just relation to our fellow humans, then neither can we do so in the absence of a caring, respecting, beautiful relationship with nature around us. So important was this to Rousseau that he sometimes got carried away and speculated rather wildly about what kinds of moral cultures were possible in various natural landscapes and surroundings. The tropics did not fare well in his theories, and neither did cities. Swiss mountain valleys were his cup of tea. But his geographical determinism aside, he made an important point. His civil religion was also a natural religion. If God and politics were to be reconciled, so, too, must nature and culture be.

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NOTES

1 C. Taylor, "A Catholic Modernity?" in *Dilemmas and Connections: Selected Essays* (Cambridge, MA: Harvard University Press, 2011), pp. 167-187.

2 M. Lilla, *The Stillborn God: Religion, Politics, and the Modern West* (New York: Knopf, 2007). See also M. Lilla, "The Politics of God," *New York Times Magazine*, August 19, 2007.

3 B. Lewis, *What Went Wrong? The Clash Between Island and Modernity in the Middle East* (New York: Harper, 2003); S.P. Huntington, *The Clash of Civilizations and the Remaking of World Order* (New York: Free Press, 2002); P. Berman, *Terror and Liberalism* (New York: W.W. Norton, 2004); T. Eagleton, *Holy Terror* (New York: Oxford University Press, 2005); C. Hitchens, *God Is Not Great: How Religion Poisons Everything* (New York: Twelve Books, 2007); S. Harris, *The End of Faith: Religion, Terror, and the Future of Reason* (New York: WW. Norton, 2005); R. Dawkins, *The God Delusion* (New York: Houghton Mifflin, 2006); M. Nussbaum, *The Clash Within: Democracy, Religious Violence, and India's Future* (Cambridge, MA: Harvard University Press, 2007); G. Wills, *Under God: Religion and American Politics* (New York: Simon and Schuster, 2007); and E. J. Dionne, *Souled Out: Reclaiming Faith and Politics after the Religious Right* (Princeton, NJ: Princeton University Press, 2009). Some of these works are about Islamic fundamentalism, radicalism, and the roots of contemporary terrorism; some are more broadly about politics in the Middle East and the Indian subcontinent; and some are about the phenomenon of religion as such. All are intent on shattering *la vie en rose* in Western secular liberalism and constitutional democracy.

4 Rousseau filled in such content in his book on education, *Emile*, in a section called "The Profession of Faith of a Savoyard Vicar." This remarkable text anticipated many elements of romanticism and transcendentalism in thinkers such as Goethe, Emerson, and Whitman. Theologically, it denied the doctrine of original sin and got Rousseau into deep trouble both in Catholic France and Calvinist Geneva.

5 J-J. Rousseau, *Of The Social Contract, Or Principles of Political Right* (1762), bk. IV, ch. Viii.

6 Lilla, "The Politics of God," p. 50.

REVIEWS & REFLECTIONS

CHN BOOKSHELF

A regular feature calling attention to important books and articles that CHN staff, board, and collaborating scholars are reading and recommend. *Quot libros, quam breve tempus.*

N. Agar, *Humanity's End: Why We Should Reject Radical Enhancement*. (MIT Press, 2010).

W. Berry, *Bringing It To the Table: On Farming and Food*. (Counterpoint, 2009).

K. Bosselmann and J. Ronald Engel, eds., *The Earth Charter: A Framework for Global Governance*. (KIT Publishers, 2010).

S. DeStefano, *Coyote at the Kitchen Door: Living with Wildlife in Suburbia*. (Harvard University Press, 2010).

Conor Cunningham, *Darwin's Pious Idea: Why the Ultra -Darwinists and Creationists Both Get It Wrong*. (W. B. Eerdmans Publishing Company, 2010.)

G. Kaebnick, ed., *The Ideal of Nature: Debates About Biotechnology and the Environment*. (The Johns Hopkins University Press, 2011).

M. Midgley, *The Solitary Self: Darwin and the Selfish Gene*. (Acumen Publishing, 2010).

E. M. Thomas, *The Hidden Life of Deer: Lessons from the Natural World*. (Harper Collins, 2009).

P. Wapner, *Living Through the End of Nature: The Future of American Environmentalism*. (MIT, 2010).

THE
LAST WORD

FACING NORTH FROM MICHIGAN'S SHORES

COMING HOME TO WISCONSIN ON A RE-cent trip, I found myself lingering along the south shore of Lake Superior in Michigan's Upper Peninsula. *Lingering*, because any time I am in proximity to the big water of Superior, I find it hard to break away from its shore. In midsummer its brisk air, freshwater surf, chill water, and expansive horizons combine to make it one of the most invigorating and restorative places on Earth. Coming to the lake, one's body sighs, and calms, and breathes. One's view is sprayed and washed clear.

On this particular visit I also found myself wandering along the shore of literature and memory. As a blustery wind blew across the water from the north, from Canada, a snippet of one of my favorite poems came aground on the waves. The full poem, from the "Children of Adam" section of Walt Whitman's *Leaves of Grass*:

> Facing west from California's shores,
> Inquiring, tireless, seeking what is yet unfound,
> I, a child, very old, over waves, towards the house of maternity, the land of migrations, look afar,
> Look off the shores of my Western sea, the circle almost circled;
> For starting westward from Hindustan, from the vales of Kashmere,
> From Asia, from the north, from the God, the sage, and the hero,
> From the south, from the flowery peninsulas and the spice islands,
> Long having wander'd since, round the earth having wander'd,
> Now I face home again, very pleas'd and joyous,
> (But where is what I started for so long ago? And why is it yet unfound?)

For me, this is one of those poems that *lodges*. Many years now into my post-English-major life, I still stand often alongside Walt on that shore. I still explore those two closing questions that transform the poem from a pensive contemplation to a fundamental query into the nature of our modern civilization, our perspective and orientation, our history and destiny.

Whitman paused there at the end of the open road at the far rim of the continent, of western culture's advance, of the young nation whose growing pains and pleasures he proclaimed to close a circle. Connecting an end to a beginning, migration to maternity, he is "pleas'd and joyous"... yet frustrated and unsettled. The outward journey was "almost circled," but the inner journey was incomplete. A whole wide world of experience behind him, Whitman yet voices the desire for elusive wisdom, and for a place to be still.

The poet's dominant axis was east-west. So, for five thousand years, had it been for western civilization, from "Hindustan" to "my Western sea." Powered by the sail, and by the stored carbon of the soils, forests, and coal, that civilization worked its way ever westward until it reached...California. There, in Whitman's words, it began to confront the reality of the self-contained Earth, and maybe to find itself there.

And yet, even as Whitman penned his poems, people were beginning to tap (as Wes Jack-

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THE
LAST WORD

son has explained) the next two "pools of energy-rich carbon": oil and natural gas. In the summer of 1859, four years after the first edition of *Leaves of Grass* appeared, drills penetrated the hills of Titusville, Pennsylvania, where "rock oil" seeped naturally from the ground. With that first purposeful production, refining, and transport of petroleum, the modern oil industry was born.

Among its other consequences, the petroleum age would allow the axis of global exploration, resource exploitation, economic authority, and political power to shift by degrees from east-west to north-south. We could put off the process of wisdom-seeking and the responsibility for land-caring by turning away from the setting sun, and toward the poles. For a century and half, cheap and abundant oil has powered the enrichment of the global north, and the exploitation of the global south. We wrestle now with the imbalance and the inequity. For this remains a whole and self-contained Earth. The consequences of our hunger for carbon, and of its unprecedented release from the ground to the atmospheric and oceanic commons, affect us all (even as they affect us differently).

Facing north from Michigan's shore, I am mindful of the impacts beyond Superior's freshwater horizon. As of this mid-August, we are very close to 2007's record low extent of arctic sea ice. According to the National Snow and Ice Data Center, sea ice is "low across almost all of the Arctic.... It is exceptionally low in the Laptev and Kara Sea areas. ...The southern route of the Northwest Passage, now appears to be free of sea ice" (http://nsidc.org/arcticseaicenews/). A preponderance of studies predicts the complete loss of arctic ice cover by 2100, with others coming in as early as 2029.

Meanwhile, another great pool of fossil fuel, the Canadian tar sands, is being developed full-bore. It cannot be most efficiently exploited, however, unless the Keystone XL pipeline is built across the United States to the Texas Gulf Coast. As I write, protesters are engaged in a two-week long vigil of civil disobedience at the White House, calling for the barring of the pipeline. My friend Rick is among those who have been arrested. He writes: "Mining, transporting, refining and burning more tar sands oil, the dirtiest, most carbon-intense oil on the planet, oil that along with other fossil fuels threatens to doom our children to a future of hell and high water, is a matter of right and wrong" (www.climatechronicle.com).

Along Superior's shore, I think of friends in the nearby Ojibwe communities of Michigan and Wisconsin, for whom the wild rice beds of the north's cool, clear waters are so central to their story as a people. I think of the Cree communities along Hudson Bay, and their continual, centuries-long story of co-evolution with, and perseverance in, the ever-changing lands of the sub-arctic. I think of the communities of the extreme north—the Chukchi and Gwich'in and Inuit and Yupik and Sami—that are at the melting edge of climate disruption, their stories thoroughly interwoven with those of bear and caribou and seal, machine and oil and ice.

Their migrations were different from those of Whitman and of western civilization. But they have all—we have all—come now to the same point. We all stand upon a far shore. Some avoid the prospect, and choose not to think too much

THE
LAST WORD

about the path behind. Others face forward with hope and nerves, tireless and inquiring, and perhaps with at least some wisdom gained. It was another poet, T. S. Eliot, who might have provided the best response, two generations later, to Whitman. At the end of "Little Gidding," Eliot suggested this:

> We shall not cease from exploration
> And the end of all our exploring
> Will be to arrive where we started
> And know the place for the first time.
> Through the unknown, unremembered gate
> When the last of earth left to discover
> Is that which was the beginning....
> ...the stillness
> Between two waves of the sea.

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