"The historical mission of our time is to reinvent the human-at the species level, with critical reflection, within the community of life systems, in a time-developmental context, by means of story and shared dream experience."

-Thomas Berry
The Great Work

We are about the Great Work. We all have our particular work-some of us are teachers, some of us are healers, some of us in various professions, some of us are farming. We have a The Great Work.

We are about the Great Work. We all have our particular work-some of us are teachers, some of us are healers, some of us in various professions, some of us are farming. We have a variety of occupations.

But beside the particular work we do and the particular lives we lead, we have a Great Work that everyone is involved in and no one is exempt from. That is the work of moving on from a terminal Cenozoic to an emerging Ecozoic Era in the story of the planet Earth... which is the Great Work.

—Thomas Berry

1Our current geo-biological era, the Cenozoic Era, began 65,000,000 years ago following the mass extinction of dinosaurs and many other species. Now Earth is undergoing another mass extinction of plant and animal species, this time caused by the impact of human activity on the community of life systems. The Cenozoic Era is ending.

2That another geo-biological era will follow the Cenozoic Era is not in question. What is in question is whether humans and other forms of life as we know them will continue to flourish. Will we achieve a viable mode of human presence on the Earth? The "Ecozoic Era" - a time of a mutually enhancing relationship of humans and the larger community of life systems represents the hope that we will.

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Membership and Subscription Information

A subscription to The Ecozoic Reader is a benefit of membership in CES. Membership in CES means a personal commitment to research, education and artistic expression concerning the Ecozoic Era and how to bring it about.

Dues are $25.00 US per year for individuals and $35.00 US for families (outside of the USA, Mexico and Canada, add $15.00 US). Sustaining memberships are $125.00 US.

Membership forms and a description of member benefits may be found at www.ecozoicstudies.org; or contact CES as indicated on the back cover.

Submissions for Publication

We invite you to share with us your thoughts, poetry, art, music, dance, ritual, meditation, story or dream experience of the Ecozoic Era and your insights on how to realize it.

To submit an item for publication, e-mail it to ecozoicstudies@mindspring.com, or mail a printed copy and the electronic file(s) on diskette (formatted for PC) to Center for Ecozoic Studies, 2516 Winningham Road, Chapel Hill, NC 27516, USA. Please send your contact information and a brief biography. Publication and copyright guidelines are available at www.ecozoicstudies.org.

Statement of Purpose

The purpose of the Center for Ecozoic Studies (CES) is to contribute through education, research and the arts to the realization of the Ecozoic Era. CES emphasizes critical reflection, story and shared dream experience as ways of enabling the creative advance needed to bring into being a new mode of human civilizational presence, and also discerning the practical steps leading toward the Ecozoic. CES is dedicated to the principle that we live in a meaningful, continuously evolving universe. In such a universe, the Ecozoic Era is a process concept—nothing to be arrived at, but rather something ever to be created. Its hallmarks are inclusiveness, interdependence, and appreciation; communion, differentiation, and subjectivity; and sensitivity, adaptability, and responsibility. It crucially involves more just and cooperative relationships among humans, as well as transformed relationships of humans with the larger natural world.
Rain falls on house and yard
my day
my world.

Once welcome, soothing gift
to parched and hungry land
now an echo and grieving symbol
of the tears I shed
this day, these many days

tears for this world
this fallen, falling world
where young men in the East
die to kill
and old men in the West
sell the great green Earth
this planet and its trees
for oil and spoils
the gods of speed, prestige and power
to rule and swagger

as we edge to the brink of
nothingness.
This is Volume IV of The Ecozoic Reader and it will have four editions. The general themes of these editions will be: If we are moving toward an ecologically based society, then “Where are we?” (No. 1 - this edition); “How did we get here?” (No. 2); “Where are we going?” (No. 3); and “How do we get there?” (No. 4).

We would like for these issues to serve as a basis of a conversation among our members and readers. We hope you will join in. Write about what you are thinking. Tell us what you are doing. Send us your commentary on current events or what is happening in your part of the world. Share with us your poetry, music and art. We can pass these on to others in the Reader, on the CES website, and in other ways.

CES is moving beyond general ideas and principles on the Ecozoic Era and the Great Work, to a discussion of the realities of the world in which we live and an exploration of the responses we can make to bring about the needed transition.

A special emphasis of this forum will be human culture and ecology. One of Thomas Berry’s primary teachings is that human culture must become cosmologically grounded. We might think of this as becoming “rightly oriented.” Societies in the past gave great attention to how their important cities were oriented on a North-South and East-West axis and in relation to the passage of the sun, moon and stars through the seasons. Thomas Berry proceeds to say, “Ecology is a functional cosmology.” So the issue of orientation he raises for our time is a more complex one. How does society become rightly oriented to the ecological dynamics of Earth?

The Ecozoic: Utopia or Authentic Vision?

Our talk of an Ecozoic Era, of a time of mutually enhancing relationship among humans and the larger community of life, may seem like Utopianism. One may have a sense that we are talking of an ideal community in which all beings live in peace. “An attractive fantasy,” a reader may say, “but one never to be realized in historical time.”

In this edition of the Reader, we will show how humans have become the dominant force in nature. As a biological force, humans consume 40% of the net primary production of the land.1 Humans have selected certain plants for agricultural and horticultural purposes that have replaced diverse species and cultivars in vast stretches of Earth. Humans have changed the chemistry of the planet. Humans are changing the planet’s climate. As a geological force, human movement of earth rivals or exceeds that of nature. Human settlements reshape the land and draw natural flows of rivers and resources to them. They create barriers to animal movements and migrations.

Homozoic or Ecozoic?

What are the root words for “homozoic” and “eco- zoic?” According to the American Heritage Dictionary “homo” means, “A member of the genus Homo, which includes the extinct and extant species of human beings.”2 Homo sapiens,” according to this same source means, “The modern species of human beings, the only extant species of the primate family Hominidae.” Homo is the genus name, and the species name is from the Latin sapiens, which means “to be wise.”

Still drawing from this same
dictionary, we find that “zoic” used as a suffix means “1. Relating to a specified manner of animal existence [and] 2. Of or relating to a specified geologic era.” It is from the Greek zoikos, meaning “of animals,” from zoion, which means “living being.”

Finally, “Eco” used as a prefix is from the Greek oikos, meaning “house.”

We could say we are living in a “homozoic” world. In view of the changes modern humans have brought about and are bringing about in Earth’s geology, plants and fauna, the designation of a new geological period would be warranted. The Nobel prize winner, Paul J. Crutzen, has argued exactly for this—for the designation of a new geological epoch called the “anthropocene.”

Such a designation, whether as homozoic or anthropocene, describes a world of human-centered dominance. We do not believe the homozoic, without a dramatic change of human culture, represents a viable mode of presence for humans on Earth. Continuation of our present mode of being will have destructive consequences for both humans and nature. We believe the future depends on a transition from the homozoic to the ecozoic—from the “house of the human” to the “house of all life.”

The term “ecozoic” is a normative concept and, at present, while elements of the ecozoic are emerging, it is more aspiration than reality. It stands for the successful transition of the human community into a mutually enhancing relationship with the larger community of life. It involves a change in the values and culture of humans. It involves a change in the ways humans live. It involves a change in the way humans relate to other-than-human beings. It involves changes in the way humans treat and relate to other human beings.

**Transition to the Ecozoic is Essential for Success**

We do not believe the term “ecozoic” is a Utopian concept. We believe it represents a necessary and essential transition if humans are to succeed. Adapting humanity to live in an ecologically based society is the most important issue facing the race.

The transition to the ecozoic does not mean the onset of a golden age. Rather, the rights of animals, plants and non-living beings will be concerns of the ecozoic. These rights, like human rights at present, will be imperfectly established and will be complex to apply in any given situation, but in the ecozoic period they will be acknowledged and be given attention.

**We believe the future depends on a transition from the homozoic to the ecozoic—from the house of human to the house of all life.**

We think of the transition that is called for in the human community from the homozoic to the ecozoic as being like those four prior, great transitions that occurred in human civilization—the ones that occurred about 40,000 years ago with the beginning of culture, 10,000 years ago with the beginning of agriculture, 3,000 years ago with the beginning of the classical civilizations, and 500 years ago with the beginning of the modern period. This transition to the ecozoic is not an option, but rather a matter of survival for humans and many other species.

**We Are Children of the Universe**

As we enter this conversation on an ecologically based society, we do not come in condemnation or judgment. If there is an enemy named “humans,” then we are they. We have to assume that what we as humans have done, we have done largely in ignorance.

We share these sentiments with Max Ehrman, as he articulated them in his poem Desiderata:

> You are a child of the universe, no less than the trees and the stars; you have a right to be here.

> And whether or not it is clear to you, no doubt the universe is unfolding as it should.

We humans are children of the universe. No less than the trees and the stars, we have a right to be here.

Whether, however, we agree with Mr. Ehrman on the unfolding of the universe is not clear. If he means, humans are passive actors in a universe that is unfolding regardless of human actions, we cannot agree. If he means that humans are endowed by the universe with intention, sensitivity, will and reason and that they are a part of that unfolding, we must
wonder if the universe as affected by our species is unfolding as it should.

Humans Were Not Meant to Fail

The late James Fant Berry, Thomas Berry's brother, was fond of saying, “The human was not meant to fail.” He meant by this that the universe brought humans into being for a purpose and the purpose was not to fail by holding narrowly to their own self interests, but rather to succeed by becoming a compassionate part of the grand communion of being.

Some people are prepared by parents, coaches and teachers to do things for which they were not meant to fail, but they fail anyway. Others do not. If Jim Berry was right that humans were not meant to fail, then how do we succeed?

This issue of the Reader is dedicated to the question, “Where are we?” as a beginning point for answering, “How do we succeed?”


3“Modern humans” is used here to refer to homo sapiens from the time of the Upper Paleolithic period, which began about 40,000 years ago. By far and away, however, the most significant changes in the Earth have been caused by humans since the beginning of the industrial revolution around 1700 CE.

4In the terminology of geology, an “epoch” is a sub-period of an “era.” Our present era, the Cenozoic Era, began 65,000,000 years ago.

5Paul Crutzen works at the Max-Planck-Institute for Chemistry, Division of Atmospheric Chemistry, in Mainz, Germany, where he won a Nobel prize for his work on the ozone layer. In January 2002 Nature article, he wrote: “For the past three centuries, the effects of humans on the global environment have escalated. Because of these anthropogenic emissions of carbon dioxide, global climate may depart significantly from natural behaviour for many millennia to come. It seems appropriate to assign the term ‘anthropocene’ to the present, in many ways human-dominated geological epoch, supplementing the Holocene—the warm period of the past 10-12 millennia. The Anthropocene could be said to have started in the latter part of the eighteenth century when analyses of air trapped in polar ice showed the beginning of growing global concentrations of carbon dioxide and methane. This date also happens to coincide with James Watt’s design of the steam engine in 1784.” Paul J. Crutzen, “The Geology of Mankind,” Nature Vol. 415, 3 January 2002 [article online], accessed July 4, 2004, at http://geology.about.com/gi/dynamic/offsite.htm?site=http://courses.eas.ualberta.ca/eas457/Anthropocene.pdf.

6We prefer “homozoic” to “technozoic” to refer to the current period of human civilization. Contrasting technozoic with ecozoic suggests that the ecozoic will not employ technology in significant ways. We believe the technology of the ecozoic period will be importantly different than present industrial technologies, but science and technology will continue to be important in the ecozoic period.

The contrast between homozoic and ecozoic is a better one. Homozoic suggests an anthropocentric understanding of the life-world. Humans are at the center and nature is adapted for the benefit of humans. Ecozoic suggests an emphasis on the entire community of life with humans as a part of that community. The well-being of the entire community of life is the primary concern.
Spring Serenade
By Jay Bryan

A chorus rises
Around a spring-fed pond,
Crouching in tree cracks, flotsam, high grass –
Spring peepers, American toads,
Chorus frogs, green and bullfrogs,
Cricket frogs and Fowler’s toads.
They finger the teeth of a comb,
Ping like distant sleigh bells,
Bubble out throaty thumps,
Click like thumbed marbles,
Squeak like a rusty door –
Whangwang, plunk, clunk, ka-tung –
A quick swallow, a low pitched snore,
Guttural croaking, clacks and clucks.

They pronounce
Their intent to mate,
Gossip after an icy winter
About what is new, who passed on,
The worry of snakes, turtles,
Small-mouth bass and orange bluegill.
Their eyes befriend the night,
See a star touch Orion’s shield
On its way by, know where to flee,
And they listen for signals
From the universe,
For sounds from the shadow world.

At the crunch of steps and tinkling ice,
They hush as one, as if a baton
Has swung shore to shore.
The silence holds like a great
Blue heron posed for flight,
And lightning bugs drift
Through sweet gum trees, like beacons
Of pale fire from deceased loved ones.

When it is time, a chime pitches up
From the darkness, emboldened, and
Lifting on wings of contemplation,
And one by one, then hundreds
By hundreds, the chorus begins again,
To inhale and exhale calls
And responses, lullabies of comfort
At the edge of mystery,

So much resting in faith
On the promise
Of an answer
From beyond.
Critical Mass
By Ellen LaConte

What are we now? We are in the Age of Critical Mass, at a point at which, though it has been coming on for a while, everything may change as if all at once and nothing will be again as it was. In our time the primary causes of critical mass are consumption—the wasting disease that the First-World Western way of living represents for Earth and its non-human species and non-Western cultures—and over-population—the wasting unease that the rest of the world’s way of living represents for Earth and its non-human species and all of its cultures. Together they result in excessive consumption, abetted by industrial methods of production and a consumerist culture, at an unprecedented, almost inconceivable and ever-expanding rate—consumption that is encouraged, even required and underwritten, by a Global Economic Order (GEO) that has no sense of limits, that can have no sense of limits if it would grow without ceasing as it is mandated and expected to do.

Imagine this: seven, eight, ten billion of us, many crammed together in a shrinking, increasingly impoverished landscape, all wanting to live decently and wishing even to live like affluent middle and upper class Americans; all growing and expanding, leaving waste, and laying waste to Earth’s resourcefulness—the unique, slowly adaptive, mutually poised, and intricately interconnected living systems that sustain us and all other living beings. That’s critical mass.

For the very long period of prehistory, we humans hadn’t the capacity or inclination for excess. Nonetheless, the records of the historical period unfailingly show humans have stolen their present pleasures from other species and future human generations. In this historical period, humans, as a species, for the last 5,000 years have lived unconsciously beyond our means. Consequently, we have repeatedly overshot local, regional, and even continental carrying capacity. But now, still for the most part unconsciously, we are at risk of overshooting the whole Earth’s carrying capacity—of living beyond not only ours but the Earth’s means. And there’s no other Earth to move to, no way to declare bankruptcy and survive with anything we’d call quality of life.

What does critical mass look like? What are its symptoms? You don’t have to live in Bombay, Baku, Kigali, or Kabul to experience them.

Highways around Los Angeles, Houston, Atlanta, Chicago, New York, London, Paris, Rome, Berlin, Mexico City and Rio, Buenos Aires, Bogotá and Beijing are gridlocked, the scene of accidents and of accidents waiting to happen; millions of us waste precious hours of our limited time every week hunched behind steering wheels, laying on our horns, making stomach acid in our thwarted rush to get where we were supposed to be ten minutes ago. Yellow clouds of exhaust and invisible winds of foul-smelling fumes spew from our idling tailpipes and hang over us while we crawl the streets of every major city; acid rain from those hot rising plumes eats away at the maple in Maine, the walls of the Grand Canyon, the noble statues on the Acropolis, and the lungs of the young and old everywhere; mercury falls out of the same sallow air down wind poisoning all that lives in our lakes and streams. From space, an industrial strength cloud can be seen trailing hundreds of miles out to sea from the cities along the coast of China and the Indian subcontinent; and in the once-pristine, idyllic valleys of Nepal where lamaseries trained Dalai Lamas in original, wild seclusion, the air now is the unholy color of the holy robes of monks.

Seething tides of us fill airports in the days around holidays; insistent crushes of us shove each other aside at soccer games, raves, and rock concerts. Garbage dumps rise like new mountains at the edges of sprawling cities. As if it were the Great Depression again, millions of Americans and over a third of the world’s working-age population are un- or under-employed. Their jobs have gone overseas, to immigrants willing to work cheaply, or to automation or oblivion. And the fewer new jobs are technically beyond the reach of most. Racial, ethnic, religious, and class tensions divide American communities and cities everywhere in the world where jobs are too few and too poorly paid.

Among the unemployed are and will be members of the shocked, unprepared middle- and upper-middle-class, middle managers and middlemen, telers and telemarketers and technicians of presently prosperous nations—like Germany where over 8 million are now without work or the promise of work—downsized by companies that no longer need more than a handful of workers to accomplish their highly technologized tasks. “20:80” is the outlook for 2020: 20 percent of the people around the world are to be gainfully employed while 80 percent will need to be pacified or policed.
the world are to be gainfully employed while 80 percent will need to be pacified or policed. At least that’s the prediction of the new global corporate elites, among them transnational CEOs, economic theorists, global policy strategists, Asian magnates and their European and American counterparts, and human resource managers whose task is to plan toward “incremental layoffs”—firings spaced far enough apart that workers don’t notice it’s a trend. A critical mass of unnecessary workers, idling, redundant—or as they are described in Europe, “rationalized”—and fomenting unrest, will be seen as a drag on a global post-industrial economy, a GEO that’s riding the crest of the wave of critical mass until the wave breaks on all the world’s shores. Workers who were the chief resource of the Industrial Age are the equivalent of lepers in the new GEO and may be equivalently ghettoed.1

Around the world, most of those who are employed will likely earn less than $1000 U.S. a year and while a new technically-skilled caste—that acceptable, adaptable handful of necessary workers—wedges itself between the few filthy rich and the masses of filthy poor in countries like India, the traditionally stable middle-classes of the Western nations are cast into an unfamiliar state of instability, uncertainty, and indebtedness, and, in countries that were recently believed to be developing, critical masses of uneducated young men turn to fundamentalism, crime, and quasi-military outlets for their unfocused energies. It’s not only jobs that are wanting in Age of Critical Mass. The governments of anciently arid African and Middle-Eastern nations, of India and Pakistan, of grain growing regions like the American plains states and Central China, and of populous western American states, now buy, dam, pump, trade in, steal, reroute, and pay through the nose for fresh water in order to get it to the growing number of places that want it, but don’t have enough. According to environmentalist Vandana Shiva, the peoples and species of more than thirty countries already suffer from scarcities of fresh water. Worldwide demand is predicted to exceed supply by 50 percent as soon as 2025. It is not incidental to the Israeli-Palestinian conflict that the West Bank’s watersheds and Jordan River supply 25 to 40 percent of Israel’s water or that Israel depends on receiving 82 percent of that water.2 Battles are being waged diplomatically and with extortion, threats, and guns over the waters of the Tigris, Euphrates, Yellow, Yangtze, Congo, Nile, Rio Grande, Amazon, Indus, and Ganges while dialogues in the American southwest over rights to the Colorado have become shouting matches.3 Consequently, water may soon be, as in places like Iraq it already is, more expensive than oil. For example, before America’s second Gulf War and second cleaning up in Iraq, Iraqis, whose average income is less than $10 U.S. per month, paid five times as much for drinking water as they did for gasoline at the pump.4 This is why multi-national corporations, such as Bechtel, Vivendi, Monsanto, and Suez Lyonnaise des Eaux, are jumping at the opportunity to privatize the water utilities of scores of cities around the world. Price gouging is not likely to cease; and where residents can’t afford the going rate, in Iraq and pretty nearly everywhere else water is short, their water is turned off.

But corporate ambitions aside, in both the cities and the countrysides, billions of us still have little or no access to freshwater and what remains of freshwater in most countries requires treatment to make it safe to drink, treatment it rarely gets. In Saudi Arabia, one of the richest nations in the world, fast-growing cities like Jeddah (which, according to Lawrence Wright, boasts the world’s largest Chuck E. Cheese fast-food franchise) lack modern sewage systems. The untreated waste of thousands of Jeddites, many of them Indians and Filipinos who have emigrated there to get some of those few remaining jobs the GEO pays well for, seeps into the groundwater or is dumped into a lake above the city. Local drinking water is contaminated to such an extent that “lung and breast cancers are forty percent above the national rate” and “hepatitis is so high that it has to be classified as an epidemic.”5 UN Secretary-General Kofi Annan reported on World Environment Day in 2003 that in the critically massed Third World, seven children die every minute of water-related diseases. In Bombay's
slum neighborhoods there is on average one toilet for 500 squatters and there, as in Sub-Saharan Africa, the custom of sharing needles for drug use is repeated in the custom of sharing plastic bags for urination and defecation, which plastic bags, cast casually aside, usually end up leaking into streets, streams, rivers, and ground water.

What lives in the water, or used to, dies too. The mouths of the Mississippi, Hudson, Chesapeake, Indus, Ganges, Danube, Yangtze and Rio de la Plata, for example, are dead zones. And the often tainted soils of the lands through which they course are swept into ever-growing, salt-soaked deltas.

Neither sanitation nor the availability of water will be improved by changing world demographics: civilization could be thought of as, and is defined by its predisposition for, citification. In 1950 there were 86 cities in the world with populations over one million; today there are 386, and by 2015 there will be at least 550. The present urban population (3 billion) is larger than the total population of the world in 1960. O ver the next half-century, barring a catastrophe that drastically reduces rates of growth, megacities—into which as many as 150,000 of us a day relocate—will reach populations in excess of 8 million. Bombay could reach 33 million, Shanghai close to thirty, Lagos more than ten. Nearly all such mega- and hyper-cities will be located in countries that already cannot support them financially or with basic needs like water, food, transportation and public health care. Many of the new masses of people living in these urban "nations"—the new city-states of the Age of Critical Mass—will be precisely those unemployed, unemployable, unruly, very young males. They will be that 80 percent of the 20:80 scenario who find their way into terrorist training cells, boot camps, or overcrowded prisons.

And at the sprawling edge of those swelling metropolises, millions more live in cardboard, thatch, mud, or sheet metal shanties, so-called "homes," cobbled together out of whatever there is left to work with. They cook what there is to cook over open fires made of whatever fuel there is left to cook with, darkening the skies with their smoke; they haul tainted water a mile or more, wash themselves and their clothing in fouled streams, relieve themselves in open pits and sluggish rivers (or those ubiquitous plastic bags), share their dirt streets—their neighborhoods—with blowing trash, rotting garbage, freely-running sewage, disease-carrying rats and mosquitoes, chickens, pigs, goats, feral dogs and cats, and the indigents and diseased, who have even less than they do. And in what some medical analysts are calling the age of "the emerging plagues," increasingly diseases are becoming our constant companions. Tuberculosis—more virulent and world-threatening now than Ebola or anthrax, HIV or West Nile virus, as easily and surreptitiously spread as Sarin gas in a subway or SARS on an airplane—the infamous wasting disease appropriately named consumption, scourge of all the civilizations in history, took a brief half-century, antibiotic-sponsored holiday to linger around drowsing in the blood streams of the more resistant among us. It lay dormant, gathering strength, until critical masses of poverty, overcrowding, poor sanitation, haphazard treatment, and denial summoned it, and its new drug-resistant mycobacterial kin, back to labor away in the lungs and lives of people in every part of the world, even among the Inuit clustered in their cold metal shacks on the edge of the Arctic Circle.

"Currently, 8 million people worldwide fall ill with [tuberculosis] each year and, because only a quarter receive effective treatment, 3 million die." Another two billion, a third of us everywhere, most notably in Asia, Africa, and Russia, all unsuspecting they are carriers, harbor and spread the bacteria. In a world approaching critical mass, in cities approaching unlivability, in a period of dramatically reduced funds for public health, as we engage with growing numbers of each other, "we engage, inescapably and absolutely, with the world’s infections."

The spread of disease is rampant where there is malnutrition and starvation. Millions of us—on average 40,000 a day, close to fifteen million a year—starve to death everywhere outside the wealthy enclaves of the GEO, and something like 840 million more are chronically hungry, disabled by hunger. Lester Brown of the WorldWatch and Earth Policy Institutes warns that since 1984 world production of grain has declined 11 percent, of beef and mutton, 15 percent, and of non-farm-raised fish and seafood, 17 percent.11 Rangeland and cropland has gone to development or to produce non-food crops for export; soils have been polluted with chemicals, salinized, acidified, eroded, and farmed out. On a finite planet in a state of critical mass, there are no more Fertile Crescents or New Worlds with fruitful breadbaskets left to discover. In fact, viable "agricultural land per capita on the planet has diminished by 7 percent since 1979," and while the demand for food may increase by more than 3 percent over the next several decades, capacity to produce food will fall below 3 percent, and, at present, world grain reserves—in the Age of Critical Mass under the management of a ceaselessly optimistic GEO which

In what some medical analysts are calling the age of “the emerging plagues,” increasingly diseases are becoming our constant companions.
does not plan for such eventualities—would carry the world’s population on a ration basis for less than two months if there were a serious food crisis.\textsuperscript{12}

As well, fisheries have been over-fished, the weather has been variable to abominable for both factory and subsistence farming, and chemistry, biogenetics and biotechnology can accomplish only so many miracles: they still depend upon sunlight, soil, and water. Something like 35 percent of the grains raised on viable soils go to feed livestock, rather than people, and something like only 35 percent of the world’s population can afford the meat the “free”-market GEO produces.

“If land erosion continues, if developing or restoring land proves too expensive, if another doubling of [crop] yield is too difficult or environmentally hazardous, if birth rates do not come down promptly . . . food could become suddenly limited not only locally, but globally,”\textsuperscript{13} reported the best-selling Beyond the Limits in 1992. In the years that have followed, none of the necessary changes have occurred. And China, unable to raise enough wheat of its own, has been importing it for a decade.

If the West persists in eating beyond its means, and the remaining arable land is everywhere else but in the West, and those who live everywhere else want for themselves the sustenance their land provides . . . intensified critical mass is the consequence and clashes are inevitable.

Then there’s energy, oil to be exact. In 1996, in a theoretically optimistic speech to the Economics Club of Columbus, Ohio, “an Ashland Chemical Company executive pointed out that alternatives to oil as an energy source are ‘simply not cost-effective,’ but that world oil reserves should last ‘almost’ 45 years, assuming that consumption doesn’t increase.”\textsuperscript{14} Oil production then will not quite be terminated, but will approximate oil production in 1960, though without the promising eighty or a hundred years ahead of additional reserves. In other words, before anyone born at the dawn of the new millennium turns 40, worldwide oil accounts, said to have been more than half gone in 2002, could be almost entirely overdrawn and those born on the bicentennials of the American and French Revolutions could face old age immobile, cold, hot, and in the dark. While they are not yet either cost-effective or delivery system-friendly on the colossal scale at which petroleum transnational corporations operate, alternative energies will be what there is.

And that statement by the oil company executive about the statistic only being good if oil consumption doesn’t increase, rather cavalierly left out, for example, the expansively industrializing nations, such as China. Worldwide, according to the World Resources Institute, “in 1990 there were already 580 million four-wheeled motor vehicles on the road; by 2010, the estimate is 800 million.”\textsuperscript{15} Putting aside for now the massive amounts of energy and materials required to build all those automobiles, trucks, vans, and SUVs using current methods and materials, even if the world’s peoples didn’t increase their car purchases/petroleum consumption, there are millions of as yet unborn humans who will. In 1960 the Earth’s population, which has more than doubled since, was around three billion. By 2040 or 2050, barring massive plagues, wars, famines or die-offs due to other consequences of critical mass, it really could be as high as nine or ten billion.

Richard Heinberg, author of The Party’s Over, asks that we “imagine 10 billion people alive, but fuel for only 3 billion. This would leave 7 billion people . . . living on the edge of famine,”\textsuperscript{16} not to mention chaos and violence. So when post-millennial oil industry CEO’s proclaim, to no media alarm or public outcry, that we have entered the final days of the age of oil, for modern industrial economies, it’s a little like saying we have entered the final days of the age of air.

And for those who protest that post-millennial concerns with Persian Gulf nations like Iraq are unnecessary—or entirely altruistic—and that Americans don’t really need Iraqi oil, well, “Yes,” but mostly, “No.” The United States has shored up its oil prospects temporarily by drilling, perilously in the Gulf of Mexico, by expanding contracts with non-Gulf oil producers like Nigeria, Mexico, and Venezuela, where getting the oil out has proven to have messy political and social implications, and by building military bases and establishing a military presence in the Gulf of Guinea in order to control the oil coming out of Africa.

For their parts, GEO market-share competitors China and Japan, the latter of which is completely dependent on imported oil, are competing, at the moment diplomatically and monetarily, for the oil coming out of eastern Siberia. But it still cannot be ignored long-term by the United States or anyone else that “the desert sands of [the Gulf] hold two of every three barrels of oil in the world.” That Russia is negotiating with edgy U.S. ally Saudi Arabia for oil. And that for its part, Iraq is believed to control reserves estimated to be equal “to those of Russia, the United States, China and Mexico combined,”\textsuperscript{17} and that even those reserves are insufficient to keep up with demand.
And then there's natural gas, a byproduct of oil drilling. Paul Roberts, author of The End of Oil, draws some compelling connections:

In the United States and Europe, new demand for electricity is outpacing the new supply of power and natural gas and raising the specter of more rolling blackouts. In the “emerging” economies, such as Brazil, India, and especially China, energy demand is rising so fast it may double by 2020. And this only hints at the energy crisis facing the developing world, where nearly 2 billion people—a third of the world’s population—have almost no access to electricity or liquid fuels and are thus condemned to a medieval existence that breeds despair, resentment, and ultimately, conflict.

Critical mass is, after all, synonymous with conflict.

As well, independent resource analysts proclaim that the major, easily recoverable deposits of significant industrial metals have largely been mined out, which is why American companies have created a consortium of aluminum producers so that the price of that declining metal will stay high and in their pockets.

And then there’s what critical mass means for the rest of creation. By 2020, which looms on the horizon now even more ominously than Orwell’s 1984, as many as 20 percent of the earth’s plant species, and similar numbers of animal and insect species may have become extinct. They are dying away from us at the rate of three per hour. We are now widely believed to be on the brink of the Earth’s sixth great extinction.

In 1948, then U.S. State Department policy wonk George F. Kennan prepared a national security assessment for the Truman Whitehouse, which, fearing the consolidating power of communists in the Soviet Union and China, was in the process of assembling the military presence that would be called NATO. Kennan’s report has been a sort of bible for every succeeding US administration and is regularly referenced or paraphrased by terrorists, who are usually in possession of the more recent, more damning numbers, in their inter-cell pep talks. In part Kennan wrote:

We have about 50 percent of the world’s wealth but only 6.3 percent of its population. In this situation we cannot fail to be the object of envy and resentment. Our real task in the coming period is to devise a pattern of relationships which will permit us to maintain this position of disparity without positive detriment to our national security. To do so we will have to dispense with all sentimentality and daydreaming, and our attention will have to be concentrated everywhere on our immediate national objectives. We need not deceive ourselves that we can afford the luxury of altruism and world benefaction.

Like terrorism, imperialism is one of the commonest responses to critical mass.

Where does all this, where does critical mass, leave us? Down through all the ages, every successful civilization and every advance of humans to new levels of capability, invention, prosperity, and productivity has been supported by the conquest, colonization and exploitation of new, untapped, fertile territory that was abundant with life and the resources necessary to sustain life.

Until now. Now there’s nowhere left to move to; there are no new, unsullied lands to discover. Now, for the first time, there is a limited supply of resources on which to make a living and a life, and there is an excess of poisonous waste with a half-life longer than many generations and no place far enough away to safely put it.

Now, people of diverse and often conflicting cultures, religious traditions, aspirations, and circumstances occupy or cultivate nearly every readily livable piece of the once unsettled planet, and they want to control and benefit from what it still offers. African tribal peoples flow over their national borders and back again in a rootless, restless tide. Perennially destitute West African nations like São Tomé, Gabon, and Nigeria that lie by seabed oil fields in the Gulf of Guinea compete with each other, not always peacefully, for U.S. air fields and cargo ports, and for the patronage of Texaco, Shell, Chevron, and Exxon-Mobil. Desperate for work, people from the Middle-East and Latin America press relentlessly up against the borders of northern nations. Tutsis and Hutus, Serbs, Croats, and Albanians, Kurds and Turks, Hindus, Sikhs, Afghans, and Kashmiris, Chechens and Russians have massacred each other in turn, littering the borderlands they each claim with severed limbs, murdered kin, and what they carried which was all they owned. National boundaries are erased in the process. First World, water-starved Israel remains in pitched battle with landless Third World Palestinians over a barren territory the size of Massachusetts. And everyone wants a piece of Iraq.

What wild viable space is left for these and other peoples to inhabit and make a living from is inaccessible
Critical Mass

Critical Mass and unsuited for development or passed over by it; what little desirable space is left costs so much to purchase and develop that it is out of reach of all but a minority.

Meanwhile, the majority of people in every nation are able only to make ends meet. Untold numbers of our fellow human beings—I repeat, over two billion, more than a third of all of us everywhere—live lives that are so troubled, impoverished, and mired in their own and our waste, that they become as “poor in spirit” as they are in material comforts. In our times they still do not inherit the Earth as the Christian Beatitudes promise but only the proverbial wind. And they are growing increasingly, understandably impatient with their lot in life. And so, in every nation these struggling poor increase their numbers in order to increase their incomes, pour over their national borders or emigrate around the world to increase their opportunity, covet the West’s wealth in order to feed their dreams, and dream like those in the West of having more for themselves and their children than just what’s left. And some, in their despair and anger, turn to terrorism.

The reality is, we are face to face with the limit to the whole earth’s carrying capacity, but most of us, especially in the West, are disinclined to accept that final, potentially fatal reality, and even less inclined to do anything about it until forced to do so.

Europe, Africa, and Asia—lands humans populated long before the Americas—and the insupportably huge cities of Central and South America have exceeded their carrying capacity already, and their people have seen the approach of critical mass to one degree or another, though they often remain in denial. But despite signs in the United States, like bankrupt state governments, shaken national and collapsed local economies, reduced public, social, and health services, failed pension plans, resource wars, and the prospect that in fifty years there could be a hundred-million more people in the United States clamoring for the good life, or at least some kind of life, Americans are definitely in denial. They have been accustomed for so long to abundance in all things and to politicians’ promises of more and still more, even if most of that more is now imported or wrested from others, that it is difficult for them to imagine either scarcity—permanent scarcity—or the primacy of waste. They . . . we . . . don’t want to imagine it. And yet the scarcity that has been the norm for most humans for a very long time, and the primacy of inorganic waste that has been the norm in densely populated areas of every nation for decades, are now becoming the norm.

Everywhere. Period.

So, where are we? We are living in the early years of an Age of Critical Mass.

1 See, for example, Jeremy Rifkin, The End of Work (New York: G.P. Putnam’s Sons, 1995).
4 This was the case under Saddam Hussein, who bribed his people into passivity with cheap oil. It remains to be seen what a democratized, liberated, American-style leadership and economy will charge Iraqis for these profit-makers.
7 Ibid.
8 Robert Kaplan offers a stark example in his description of a representative shanty-town on Africa’s Ivory Coast outside Abidjan, in Sierra Leone: “[M]ore and more of Abidjan, is a slum in the bush: a checker-work of corrugated zinc roofs and walls made of cardboard and black plastic wrap. It is located in a gully teeming with coconut palms and oil palms, and is ravaged by flooding. Few residents have easy access to electricity, a sewage system, or a clean water supply. The crumbling red laterrite earth crawls with foot-long lizards both inside and outside the shacks. Children defecate in a stream filled with sewage and pigs, droning with malarial mosquitoes. In this stream women do
the washing. Young unemployed men spend their time drinking beer, palm wine, and gin while gambling on pinball machines constructed out of rotting wood and rusty nails. These... same youths rob houses in more prosperous Ivorian neighborhoods at night.” Robert D. Kaplan, “The Coming Anarchy,” The Atlantic Online, February 1994. Kaplan expanded his critically acclaimed article into a book which was published in 2001 by Vintage Press, New York.


19 The first, some 400 million years ago killed a quarter of marine families and was caused by a glaciation followed by a rapid melt-down; the second, 360 million years ago killed a quarter of marine families again and over 50% of marine genera, cause unknown; the third and worst, about 250 million years ago, extinguished about 95% of all species and was likely caused by volcanic eruptions or an asteroid; the fourth, caused by undersea volcanoes about 200 million years ago, wiped out half “the major groups of marine life”; and the one we know best, the fifth, 65 million years ago, brought the dinosaurs’ domination of their landscapes to an end. An asteroid collision was the likely cause of that great extinction of species. Genevieve Roberts, in “Why Britain’s disappearing butterflies may be early victims of the sixth mass extinction,” Steve Connor, The Independent, 19 March 2004, [newspaper online] available from http://news.independent.co.uk/low_res/story.jsp?story=502762&host=3&dir=58, accessed March 20, 2004.

This week was explosive. My garden produced cucumbers, zucchini, yellow squash, potatoes and the first cherry tomatoes. I was overwhelmed and since I can’t share the fruits, I share the reflections.

I am not sure there is anything in this world to be learned that cannot be known through growing a garden. That work is required to live is a given, so you prepare the soil and plant the seeds. Then, first, one learns the dynamics of trust. You must trust the soil to render up its nutrients. You must trust the weather that it will not dish out more than the plants can bear, and that it will mete out enough of what they really need. Then there is the issue of patience. You must wait. But you also learn that patience is not idleness. Unseeded growth must not be allowed to consume what you wish for your plants.

A garden is like going to church daily. The plants growing tall raise praises to the heavens. Evil is manifest in the garden when you are deterred from participation. That which distracts you may be a change of focus or it may simply be evil made manifest and attacking your intention. Mosquitoes so insidious as to blight your body and mind can make you feel akin to Job.

Unseeded growth seems related to unintended consequences. I am saddened to realize that seeds sewn through the ages, by the wind and water will come up to overtake your intentions if there is no care or a loss of focus. It makes the “news” nearly every day.

Sorrow is known in the loss of a whole crop. Obviously the rabbits needed the tender shoots of the beans more that I needed the beans. Joy is known in abundance. Timing is everything to both the comedian and the garden.

Forget your drivenness toward perfection. It just won’t happen. You are not that much in control. Planting these seeds didn’t make you God. You have dirt under your fingernails (those that aren’t broken to the quick) that won’t come out until you are dead.

Responsibility is sometimes overwhelming in the garden—deciding which shoots to thin and which to leave. Not deciding condemns the plants to marginality. Against your own sense of will you must be obedient to the rain, sun, wind and soil. Freedom is exhilarating as you watch fruit flourish.

Pride, covetousness, lust, anger, sloth, envy and gluttony are all present in the garden, both within the gardener and among the plants.

When you dig the potatoes and deposit newborn rabbits to your bucket, your heart breaks. Guilt is there in many forms. You should have known a nest might be there. They ate all the beans. Why were you in such a hurry? Will your touch result in a mother’s permanent rejection?

Grace is abundant. Sometimes it happens. Sometimes it doesn’t.

That work in a garden should make more than a living is obvious. It makes life. Love is a garden. It must see all things, bear all things, believe all things and hope all things. The kindness love requires may, most of all, be given to you, the gardener. It is a way to understand all things.
n many respects, Richard Heinberg’s alarming book, *The Party’s Over: Oil, War and the Fate of Industrial Societies* (Gabriola Island, BC: New Society Publishers, 2003), is difficult and disturbing to read. The book describes, in grim detail, the looming world oil crisis. According to the petroleum geologists that Heinberg interviews, oil production will peak in roughly 2012 and begin a steady decline, bringing our industrial infrastructure to a screeching halt. The book affirms the urgent need for transformation to an ecozoic orientation to our planet.

As Thomas Berry and Brian Swimme point out, the modern industrial period is characterized by the worldview that the universe is a machine, full of objects with which we may do as we please. We are dependent on machinery fascinated by its ability to reduce our labor. But as Heinberg’s book observes, if the Earth’s a machine, it’s a “machine” we have long taken for granted. Specifically, the fuel needed to satisfy the ravenous feeders at the industrial banquet is being exhausted. We are similar to New Year’s Eve revelers assuming an industrial-size freezer full of champagne, while in fact there remains only a single bottle. Having been on a 200-year binge, fueled by the most energy-dense natural resource ever found on the planet—fossil fuels in the form of coal, oil and natural gas—our dependence on oil and high-tolerance for excess is the biggest challenge facing humans. Population, economy, agriculture and technology have bloomed as a direct result of this “temporary gift from the earth’s geological past.”

But as the oil executives and petroleum geologists explain in Heinberg’s book, less oil is being discovered and what’s left is becoming increasingly difficult and expensive to extract. In addition, the current American administration’s reckless policies of endless warfare may help to accelerate the ugly process of a collective “hitting bottom.” Few in charge are willing to point out or examine this insanity, since no public figure wants to be associated with bad news. Nevertheless, the revelers are in for a rude awakening.

If we are to avoid going off fossil fuels cold turkey, there are immediate steps that must be taken to soften the blow. Making a transition to renewables, reducing population, and of course, reducing consumption are immediate priorities. But reducing consumption is the critical shift, according to Heinberg, because renewable forms of energy will never be able to match and maintain the levels of manufacturing, transportation and growth that our economy depends upon to be “healthy.” Heinberg delineates why renewables are not a perfect substitute for energy-dense fossil fuels in great detail in his book.

The hard math of energy resource analysis yields an uncomfortable but unavoidable prospect: even if efforts are intensified now to switch to alternative energy sources, after the oil peak industrial nations will have less energy available to do useful work, including the manufacturing and transporting of goods, the growing of food, and the heating of homes . . . and the available alternatives will likely be unable to support the kinds of transportation, food, and dwelling infrastructure we now have; thus, the transition will entail an almost complete redesign of industrial societies.

Most people understand that a fundamental shift in our lifestyles is imperative for the survival of our species. In spite of this daunting picture, Heinberg offers hope and a vision for a more integral and higher quality of life. Because of the many challenges we face, including competition for remaining resources, an ethic of community-centered living will necessarily become the norm.

If such recommendations were taken seriously, they could lead to a world a century from now with fewer people using less energy per capita, all of it from renewable sources, while enjoying a quality of life perhaps enviable by the typical industrial urbanite of today. Human inventiveness could be put to the task, not of making ways to use more resources, but of expanding artistic satisfaction, finding just and convivial social arrangements, and deepening the spiritual
experience of being human. Living in smaller communities, people would enjoy having more control over their lives. Traveling less, they would have more of a sense of rootedness, and more of a feeling of being at home in the natural world. Renewable energy sources would provide some conveniences, but not nearly on the scale of fossil-fueled industrialism.

The energy decline will necessitate a shift toward an ecozoic lifestyle characterized by communities focused on collaboration for sustaining their citizens. Humans will necessarily organize themselves into smaller, slower, more locally based communities in order to survive without the vast consumer machine at its disposal. People will become reacquainted with the air and with the soil beneath their feet as they travel outside of motorized vehicles and off the rivers of concrete that suffocate our lands. In addition, humans will become reacquainted with the many features of soil as they will need to supplement their food supply.

The silver lining in Heinberg's startling book is its validation of the necessity for us to live lifestyles that are mutually enhancing to the Earth systems that sustain us. Regardless of individual preference, this is the direction in which human communities will need to move. Otherwise, the planet itself will stage an intervention on her energy-addicted human inhabitants.

The Party's Over is an excellent book that outlines the evolution of energy and its relationship to all living beings, from the single-celled organism to current human industrial cultures. It is a matter of fact, scientifically based book that leaves aside moralizing and focuses on the empirical evidence around the history of our energy consumption and management. This book is highly recommended for those who are interested in the potential consequences and challenges to us of running out of oil.
There are words that motivate people to action and words that frighten them into retreat. There are issues that galvanize the public and issues that paralyze. The oft-mentioned, but seldom-acted-upon topic of global climate change is a paralyzer. In my experience, to mention it is a good way to end a conversation or produce an empty room at a workshop. With the media, global warming is seen as a contest between, on the one hand, the nearly unanimous gathering of the world’s foremost scientists saying, “It’s happening already, humans are causing it, and we need to change,” and on the other, a small group of scientific nay-sayers, along with the bulk of the business community arguing against the reality of climate change or the cost-effectiveness of combating it. Claiming to present a balanced picture, commentators usually show both sides as if they were equal regarding the science. The practice leaves the impression that the global phenomenon of climatic transformation is a matter of personal predilection: “You may think this, or you may think that.”

Diffidence is reflected in our behavior. The known facts about the global warming trend, its causes, and its current and likely future consequences are being reported daily, no doubt hourly, in newspapers, popular magazines, radio and television, but with faint effect on the way people live, the way schools teach, the way governments govern or the way most justice organizations advocate for their constituencies. The legendary visitor from outer space would have a hard time accounting for the lack of movement around this problem, except among Earth researchers and Earth activists.

Oh, there is talk about it. There is rarely a conference in which the issue of climate change is not mentioned by someone, even if only by using the code term “environment.” People know that it is occurring and they know it’s important. What is it that people don’t know? As an environmental justice advocate, I often ask myself this question. Maybe knowledge is not what matters when so much is at stake. When the bridges are burning behind and apparently before us, it is not surprising that there is paralysis.

Who wants to leave the comfortable main road before it is fully blocked and barricaded? That’s the question of our day in petroleum-fueled, prosperous nations. The researchers have scouted the future and brought back the news that the climate is changing. We have the evidence now to act. Let’s listen to what they are saying.

The Scientific and Observational Evidence

In the 2001 summation of their decade-long work, the Intergovernmental Panel on Climate Change (IPCC) reported,

Since 1860, global average temperatures have increased 1 degree Fahrenheit. While the warming record shows significant spatial and temporal variability, the global upward trend is unambiguous. Most of the warming in the 20th century occurred from about 1910 to 1945 and since 1976. Twentieth century warming is likely to be the largest during any century during the last 10,000 years for the Northern hemisphere, with the 1990s the warmest decade and 1998 the warmest year.

As for the twenty-first century, Carol Goodstein reported in Nature Conservancy Magazine, “Today scientists largely agree that if greenhouse gas emissions are not curtailed, the Earth’s average surface temperatures could increase by 3 to 10 degrees Fahrenheit by the end of this century. This is a considerably greater rise in average temperature than was estimated just five years ago.”

Observations from all over the planet confirm the warming trend.

- The last century has been the hottest period in the Himalayan Mountains in the past 1,000 years.
- An uncommonly hot and dry summer deprived bears in Colorado of their usual meals of berries and acorns, forcing the animals to forage in trash cans, backyards, and kitchens. Reports of bear sightings are occurring almost daily in town and neighborhoods across the Rockies. Ice cover records of lakes and rivers in North America, Asia, and Europe show a steady warming trend in the Northern Hemisphere.
over the last 150 years, according to a study by the University of Wisconsin in Madison.  

- Since 1970, the state of Alaska has required a minimum of 6 inches of snow over the fragile tundra and 12 inches of hard ground before it would allow oil companies to fire up exploration vehicles on the North Slope. As winters grow shorter and warmer, the number of days that meet those criteria has dropped by half. The state is now studying whether to relax the requirements.  

- European lakes and streams are feeling the effects of the hottest summer in 500 years. Lake Balaton, one of Hungary's main tourist attractions, retreated from shore by as much as 300 feet last year, a phenomenon also attributed to low annual rainfall. Water levels also dropped dramatically in Croatia's Sava River, the Rhine, and the Danube.  

- To see how fast the Earth's glaciers are vanishing, look no farther than Glacier National Park, where ice formations thousands of years old may be gone in thirty. Because of rapidly warming temperatures over the past century, Glacier National Park is no longer getting enough snow to replace the ice melting during the summers. In 1850 there were an estimated 150 glaciers in the park. Today a mere 26 remain, and those that are left . . . are fast disappearing.  

- The Arctic has warmed faster than any other region on Earth—nearly 5 degrees F. over the past 30 years, compared with only 1 degree F. over the past 100 years globally. The snow and ice that coat the Arctic landscape reflect up to 80 percent of the solar radiation that beams down. But as greenhouse gases cause temperatures to rise, the snow and ice melt back and the darker land and water absorb radiation instead. As they warm up, more ice melts, increasing the radiation absorbed, and causing temperatures to rise even further.  

- The brilliant beauty of coral reefs has begun to disappear before our eyes, along with the incredible variety of marine life that surround them. It has taken only a slight increase in sea-surface temperatures to unravel one of Earth's most ancient ecosystems. . . . A baffling malady called bleaching is draining the color—and the life—from the world's coral reefs. . . . In the two decades since mass bleaching was first identified, it has killed more corals than all other causes combined. More than 16 percent of the world's corals have succumbed to bleaching. Countless millions of marine animals have died as well—anemones, sponges, sea fans, mollusks, crab, shrimp, and fish, not to mention the seabirds and turtles that depend on them. . . . In the past 100 years the ocean's surface temperature has warmed an average of about 1.8 degrees Fahrenheit. Less than 2 degrees doesn't sound like much, but . . . it's too much for coral reefs.  

### What Causes Global Warming?  

A primer on the topic of global warming would distinguish climate from what we think of as weather. “Climate is the average weather of a given area over an extended period of time. One of the foundations of human societies and economies is a stable climate. The Earth's climate is driven by a continuous flow of energy from the sun. This energy arrives mainly in the form of visible light. Ever since life first appeared, natural emissions of water vapor, carbon dioxide and other gases have helped maintain the temperature of Earth within a range at which life can exist. They act like a glass greenhouse to trap the sun's heat in the atmosphere, as an essential part of keeping the planet warm and habitable.”  

“The planet keeps cool by emitting heat back into space in the form of infrared radiation—the same radiation that warms us when we sit near a campfire or stove. But while the atmosphere is fairly transparent to sunshine, it is almost opaque to infrared radiation. Much like a garden greenhouse, it traps the heat inside. About half of the solar energy that reaches Earth passes through the atmosphere and is absorbed at the surface. In contrast, about 90% of the infrared radiation emitted by the surface is absorbed by the atmosphere before it can escape to space. In addition, greenhouse gases like carbon dioxide (CO₂) as well as clouds can re-emit this radiation, sending it back toward the ground. The fact is, Earth's surface receives almost twice as much energy from infrared radiation coming down from the atmosphere as it receives from sunshine. If all greenhouse gases were removed from the atmosphere, the average surface temperature of Earth would drop from its current value of 59º F. to about 0º. Without the atmosphere's greenhouse effect, Earth would be a frozen and nearly lifeless planet.”  

While the warming blanket is necessary, in recent centuries the blanket, as the result of increases in greenhouse gases, has become thicker. This thickening is the primary reason for the increase in temperature. “The greatest warming effect currently stems from CO₂, followed by methane, halocarbons, and nitrous oxide.”
Greenhouse Gases

Carbon dioxide is the biggest component of greenhouse gases. Researchers for the National Oceanic and Atmospheric Administration state:

Carbon dioxide gas constitutes a tiny fraction of the atmosphere. Only about one air molecule in three thousand is CO₂. Yet despite their small numbers, CO₂ molecules can have a big effect on the climate. . . . Carbon dioxide has a much longer lifetime in the atmosphere than water vapor. If CO₂ is suddenly added to the atmosphere, it takes 100 to 200 years for the amount of atmospheric CO₂ to establish a new balance, compared to several weeks for water vapor. . . . Through millions of years of Earth’s history, trillions of tons of carbon were taken out of the atmosphere by plants and buried in sediments that eventually became coal, oil, or natural gas deposits. In the last two centuries humans have used these deposits at an increasing rate as an economical energy source. In a similar way, cement manufacture releases carbon atoms buried in carbonate rocks. Today humanity releases about 5.5 billion tons of carbon to the atmosphere every year through fossil fuel burning and cement manufacture. Approximately another 1.5 billion tons per year are released through land use changes such as deforestation. These releases result in an increase of atmospheric CO₂ of about one-half percent per year.13

Carbon dioxide in the atmosphere is rapidly increasing:

Using universally accepted scientific methods, including analyzing ice cores from the Arctic and Antarctic, ancient tree rings and cross sections of coral, most scientists agree that the level of carbon dioxide emissions has increased 30 percent since 1850.14

Present concentrations of CO₂ are the highest in the past 420,000 years and likely in the past 20 million years, and the rate of increase is unprecedented in the past 20,000 years.15

The EPA describes the sources of the increased carbon dioxide this way:

The burning of fossil fuels for energy—coal, oil, and natural gas—is the primary source of emissions. Energy burned to run cars and trucks, heat homes and business, and power factories is responsible for about 80% of global carbon dioxide emissions, about 25% of U.S. methane emissions, and about 20% of global nitrous oxide emissions. Increased agriculture and deforestation, landfills, and industrial production and mining also contribute a significant share of emissions.16

While carbon dioxide is the primary greenhouse gas, other gases and aerosols play their roles in the warming.

Other naturally occurring greenhouse gases such as methane and nitrous oxide have also been increasing, and entirely man-made greenhouse gases such as halocarbons have been introduced into the atmosphere. Many of these gases are increasing more rapidly than carbon dioxide. The amount of methane, or natural gas, in the atmosphere has doubled since the Industrial Revolution. Although its sources are many, the increase is believed to come mainly from rice paddies, domestic animals, and leakage from mining.17

The IPCC’s 2001 report states, “While methane emissions are far lower than CO₂ emission, methane is estimated to be 21 times more effective than CO₂ at trapping heat in the atmosphere over a 100-year time horizon.”18

Regarding halocarbons, the report says,

The emission trends of most of those halocarbons controlled under the Montreal Protocol and its Amendments are either declining or increasing at slower rates than in the early 1990s. However, other halocarbons that serve as substitutes for CFCs—such as hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs)—are increasing rapidly, and most of them are significant greenhouse gases.19

Particulates are also indicted in the literature:

“(B)lack soot contributes more to climate change than was recently believed. Black carbon is a product of incomplete combustion and is generated by tailpipes, industrial pollution, outdoor fires and household burning of coal and other fuels.”20

Changes in Land Use

In addition, changes in land use may rival greenhouse gases in their contributions to global warming, according to an international study led by an atmospheric scientist at Colorado State University. Land surface changes “redistribute heat within the atmosphere both regionally and globally, and may actually have a greater impact on climate than that due to all greenhouse gases released by human activities. Through land cover changes over the last 300 years, we may have already altered the climate more than would occur associated with the radiative effect of a doubling of carbon dioxide.”21
What is Being Done

These are the reports brought back to us by the heroes who have gone beyond the near horizon to investigate the road ahead. They tell us that humans have already altered the global climate in these ways, with consequences they have observed and more which they can predict, based on past experience, and to a lesser degree on climate models. Where we are today regarding global climate change is within a brief period of opportunity, years of which have already been squandered. In 1992 when the Framework Convention on Climate Change (FCCC) was formulated in Rio de Janeiro, Brazil, 175 nations signed and ratified it, the U.S. among them.22 The Kyoto Protocol to implement the FCCC was negotiated in December 1997.23 At that point it seemed likely that Kyoto would mark the beginning of an internationally supported move toward mitigation. In 2004, even its minimal reductions are beyond the vision of U.S. politicians.

By the public record, their inaction cannot be for lack of scientific information or consensus. Asked by the White House to consider the evidence for climate change, the National Academy of Sciences confirmed the findings of the IPCC.24 The Environmental Protection Agency’s June 2002 report submitted to the UN as required under the Rio treaty projected the disappearance of Rocky Mountain meadows and coastal barrier islands, as well as the disruption of snow-fed water systems in the West.25

Some scientists have proceeded from reporting research into advising action. In May 2001, seventeen of the world’s most conservative scientific societies called on politicians everywhere to honor the Kyoto agreement.26 The Union of Concerned Scientists, calling global warming “the most serious environmental problem of the 21st century,” is organizing scientists to educate the public about its causes and solutions.27 The National Academies have released studies by the Committee on Abrupt Climate Change, stating that a “no-regrets” policy would provide benefits whether or not abrupt change occurs.”28 James Hansen, Director of the NASA Goddard Institute for Space Studies and one of the first scientists to warn of the warming in the 1980’s, writes, “Halting global warming requires urgent, unprecedented international cooperation.”29

Based on public record, too, we know that U.S. government officials do believe the research. President Bush himself stated in 2001, “My Administration is committed to a leadership role on the issue of climate change. We recognize our responsibility, and we will meet it—at home, in our hemisphere, and in the world.”

With this pledge, he reiterated the seriousness of climate change and ordered a Cabinet-level review of U.S. climate change policy. He requested working groups to develop innovative approaches that would: (1) be consistent with the goal of stabilizing greenhouse gas concentrations in the atmosphere; (2) be sufficiently flexible to allow for new findings; (3) support continued economic growth and prosperity; (4) provide market-based incentives; (5) incorporate technological advances; and (6) promote global participation.30

On June 6, 2001, Condoleezza Rice, White House national security adviser, said, “This is a president who takes extremely seriously what we do know about climate change, which is essentially that there is warming taking place.”31 An unclassified report out of the Pentagon was published in January 2004 in Fortune, revealing that abrupt climate change is being taken seriously in military planning.32 Global climate change is accepted as fact, as is the accumulation of greenhouse gases in the atmosphere. The lack of interest in reducing emissions is based on business concerns: how the short-term economic picture might be impacted by a change of direction.33

What Will We Do About It?

And so here we are on the road, with our scouts warning us to find a new path but our leaders continuing onward as if there were not an end to it. They are going on and we are following because to get off the highway would mean changes more monumental than either leadership or followers have yet been willing to face. The United States creates 25% of the emissions34 that form the greenhouse blanket, and we have increased our output 16% from 1990 to 2001.35 How much would we have to alter our behavior to bring down those percentages? “Too much,” is apparently our corporate reply. Detrimental human-induced global climate change is occurring, it will intensify to the degree human activities perpetuate it, and the biggest contributors to the problem refuse to alter course.

Obviously, we need more than information if we are to act sensibly in this moment. We need wisdom and, lacking that in elected leaders, it must come from ourselves. The global climate cannot be considered peripheral to any concern. The word “global” informs us that every member of the ecosystem is involved, including ourselves. To add the word “climate” to the phrase means the habitability of the globe is at stake. The scientists are telling us that we have a bit of time to reduce
the rate of the warming, and thus its impacts. Those of us who aspire to live with compassion and courage must apply our collective spiritual, intellectual, economic and political powers during these next years—numbered by many as fifteen, twenty, twenty-five. We must arrange our private and public affairs with the goal of stabilizing Earth’s climate. The only questions about climate change, really, are the ones that ask, “What will we do about it?”

1 Organized under UN Environment Program and World Meteorological Organization auspices, the Intergovernmental Panel on Climate Change (IPCC) is composed of several hundred climate scientists for each of three working groups, selected from nominations of one hundred member governments at five-year intervals beginning in 1988. The fourth volume of the report was published in October 2001 following an exacting process in which each scientist reviewed all the peer-reviewed literature on a particular aspect of the problem. By the end of a five-year cycle, at least 1,500 experts, including nearly every important climatologist on Earth, were involved. Bill McKibben, “Some Like It Hot,” The New York Review, July 5, 2001, 35.


6 Sierra, March/April 2004, 17.

7 Ibid.


13 IPCC, “Climate Change 2001”.

14 “Our Changing Climate,” Report to the Nation, 17.


16 IPCC, “Climate Change 2001.”


18 “Our Changing Climate,” Report to the Nation, 19.


20 IPCC, “Climate Change 2001.”


23 President George H. Herbert Walker Bush signed the FCCC.

24 Taking 1990 emissions as the baseline, it allowed each country to decide how much to reduce GHGs during a period ending 2009 to 2012. The U.S. selected 7% as its goal and President Clinton signed the protocol, but it never reached the floor of the Senate.


27 Ibid.


Cricket by the Freeway (the day before autumn equinox)
By Richard Arnold

Ancient tiny voice crying in a wilderness of our creating? that one unchanging season of pavement and tire storm where even night is vanquished— like a ticking heart in a sick body, singing his little wings off as I walked one evening: the last cricket of summer. beating beating beating beating he sang. Not my idea of a place to go and hear a cricket's idyll to the dying summer (better in placid fields gold in the lowering sun of Leo, with blackberries bubbling free burgundy and orb-weaver spiders flinging spangled wheels of light from bush to bush)— yet here I was beside the freeway— unseasoned, un-idyllic field— pausing to hear the last cricket of summer. bleeding bleeding bleeding bleeding he sang. I want to cease my noise, dry up, become a weightless shell of oblivion and blow away in a winter blizzard. Just yesterday despair whirled down and almost sucked me up as I walked by the freeway: then I heard the cricket singing the season dying, the season to come. fleeting fleeting fleeting fleeting he sang. The last cricket of summer chose to spend the end of his life in a gravel and weed plot forty feet by twenty close by a roaring freeway. Why come here, why sing? Yet he did, and what he sang, and what I heard, was his final song. I thought perhaps it was his lament at being lost in this unnatural wilderness. Or maybe it was something else, the glad patience of eons that sees the end of freeways, return of seasons. So this lone cricket singing his last song beside a lost freeway found me, and I jumped up rubbed my legs together and flew home to my little plot to sing this poem he gave me.
We cannot answer “Where Are We?” without talking about America and its role in the world.

Mark Hertsgaard writes in *The Eagle’s Shadow*, America: a place that is very rich and shoots lots of guns. It’s not the most sophisticated analysis, but it’s a fair shorthand for how the United States is seen by many people around the world. Friend or foe, rich or poor, foreigners tend to fear America for its awesome military power even as they are dazzled by its shimmering wealth.¹

Gary Dorrien, a cogent writer on neo-conservatism in America, states:

The United States is the most awesome world power that the world has ever seen. Its economy out produces the next eleven nations combined, accounting for 31 percent of the world’s output. It floods the world with its culture and technology. It spends more on defense than the next twenty nations combined. It employs five global military commands to police the world; it has 750 military bases in 130 countries, covering two-thirds of the world; it has formal military base rights in forty countries; each branch of the armed services has its own air force; the U.S. Air Force operates on six continents; the U.S. deploys carrier battleships in every ocean; and the U.S. Special Forces conduct thousands of operations per year in nearly 170 countries.²

Mark Hertsgaard gives a list of ten things foreigners think about America:

1. America is parochial and self-centered.
2. America is rich and exciting.
3. America is a land of freedom.
4. America is an empire, hypocritical and domineering.
5. Americans are naïve about the world.
6. Americans are philistines.³
7. America is the land of opportunity.
8. America is self-righteous about its democracy.
9. America is the future.
10. America is out for itself.⁴

He also observes that the way foreigners see America is not the way Americans typically view themselves:

We see ourselves as decent, hardworking people who wish the rest of the world well and do more than our share to help it. We are proud of our freedom and prosperous way of life, and we understand why others want the same. We would rather not “entangle our peace and prosperity” in foreign toils, as the father of our country, George Washington, advised long ago, but we will use force if necessary to oppose injustice and protect freedom around the world for ourselves and others. We have our shortcomings like anyone else, but we believe we live in the greatest country in the world.⁵

Michael Moore, an American filmmaker, released *Fahrenheit 9/11*, which he directed, wrote and produced, to American audiences on June 23, 2004. He, having grown up in a poor family in Flint, Michigan (a once prosperous center of automobile manufacturing, now decaying after being abandoned by industry), writes from the perspective of the American underclass. It is also the perspective of the world underclass and generally, as described by Mr. Hertsgaard above, is a perspective shared by many foreigners.

Stylist a “documentary,” it opened to record audiences for such a film. Audiences stood and cheered as the film ended. They stood in long lines waiting for the next showing, and many, disappointed, were turned away to sold-out shows. Conservatives and Republicans were apoplectic regarding the “factual” inaccuracies of the film, but didn’t know how to react for fear of drawing still more attention to it. Establishment liberals watched with primitive enjoyment as Moore’s boldly confrontational narrative reeled on, yet with puzzlement as to what to do with this hot potato.

A documentary, according to the *American Heritage Dictionary*, “[presents] facts objectively without editorializing or inserting fictional matter.” Can it be true, as M o o r e’s film seems to suggest, that Iraq before the 2003 American-led invasion was a peaceful country of happy commerce, warm friendships and children happily flying kites? Did Iraq present no threat to America? Was the reason for the American-led invasion of Afghanistan in 2001 to build an oil pipeline across the country?
The Truth About FARENHEIT 9/11

Critics have rushed to set the record straight. Dave Kopel of the Independence Institute has detailed “Fifty-six Deceits in Fahrenheit 9/11.” Christopher Hitchens, in the on-line magazine Slate, posted “Unfairness 9/11: The Lies of Michael Moore.” David Ardy and Jason Clarke have written the book Michael Moore Is a Big Fat Stupid White Man. Another group has produced a documentary film on Michael Moore’s documentary called Michael Moore Hates America. Such is the character of American political discourse today.

So what is the truth about Fahrenheit 9/11? Let’s suppose it is not a documentary—that it doesn’t present facts objectively without editorializing or inserting fictional matter. Let’s also suppose, however, that it is not a partisan political film—that its critique might apply equally to right and left, Republican and Democrat, and its message is one with which people from differing political perspectives might agree. Let’s suppose this film is a mirror, one held up so that Americans can see how they are seen by the world and so that the American overclass can see how it is seen by the underclass. Michael Moore won’t make it easy to adopt such a perspective because he personalizes so much of his message, but let’s try.

American Politics

The film opens with Albert Gore wondering about an election where Bush won Florida by less than 1,000 votes, yet as many as 75,000 people, mostly African American, were disenfranchised by being mistakenly stricken from the voting roles as felons, and those who finally determined the outcome were members of Bush’s family or had ties (such as Supreme Court Justices appointed by Bush’s father) to the Bush family. Not one United States Senator, Republican or Democratic, would join in a challenge to the disenfranchisement of many African American voters in Florida.

The truth is that American democracy was shown to be badly flawed in the 2000 election and it continues to be so. No moral leader rose, as Sam Erving did in the Watergate crisis, to claim the high ground in leading the nation in its deliberations. Ultimately, constitutional deadlines for certifying elections took precedence over correcting mistakes in an electoral process, whether deliberate or not, which made it impossible to determine fairly the outcome of the votes in Florida. An interpretation of “equal protection of the law” used by the Supreme Court to invalidate the Florida Supreme Court’s effort to determine the outcome of the vote in limited districts (where the use of flawed punch cards made it difficult to determine how votes were cast) failed to consider other measures that could have yielded an accurate vote count in the state as a whole.

Partisanship increasingly seems to overrule ethical principle in American politics. Political races are treated like sporting events. Personality, personal attacks, sound bites, money and political professionals determine outcomes. Being involved in a political party means raising money for elections. Being an involved citizen means watching television ads that the money buys. There is little open political discourse and limited inquiry into issues.

In national elections, slightly more than half of the population votes. In local elections, substantially less than half of the people vote and often for candidates whose positions are unknown to the voters. At one time the underclass looked to government for help. Expectations of such help are very low today.

The fact that the United States spends more money on the military than the next twenty nations of the world combined notwithstanding, no person dares run for the Presidency of the United States who does not advocate more security and more military spending. The fact that America with 5 percent of the world’s population produces 31 percent of the world’s output notwithstanding, no person dares to run for the Presidency of the United States without promising more economic growth. . . . growth which makes no distinction between million dollar homes for the rich and adequate shelter for the poor.

The debate over values has become a shouting match. One side charges the other with being baby killers, supporting sexual perverts, being anti-Christian, being for class warfare, and favoring socialism, and the other side accuses opponents of loving war, being bigoted, being extreme in their religious views, and ignoring the needs of women and the poor in a blind pursuit of wealth, comfort and power. The 2004 Presidential campaign promises to be one of the most viscerally charged ever.

American Imperialism

In the beginning of his tenure, Bush, the hapless unelected President, was unable to get his Presidency going and spent 42% of his time on vacation. 9/11 proved to be the turning point. 9/11 was used by Bush to push the neo-conservative agenda, which included implementing a plan to invade Iraq as part of an effort to establish American global supremacy, cause massive increases in military spending, and implement regressive social policies, all at the expense of those who would challenge the establishment American vision of the world and the world’s poor.

As some commentators have observed, the policies pursued by Bush are not dissimilar from those pursued by other U.S. administrations since World War II. The
question is whether the extreme application of these policies by Bush represents a difference in kind or in degree.

There are great disparities in economic well-being in the world. The present world economy serves one-third of the world’s population well, one-third marginally, and the bottom third (two billion people) poorly. A billion people own cell phones. Three billion people have never made a phone call. The need to improve the lot of the poor is not the point on which left and right disagree. Rather, they disagree on the causes of poverty and how to improve conditions. In a world like this, what’s a wealthy super-power to do?

Conservatives argue that the United States did not seek its current position in the world. They recount that in the post-World War II world, only the United States had the economic strength to rebuild the economies of Europe and even of Japan, Korea, Taiwan and other parts of the East. Only the United States had the military strength to stand up to what understandably was seen as the new Hitler and Axis powers, namely Stalin and the Communist states. After the fall of Communism in the West in 1989, there was a power vacuum in which latent nationalistic, ethnic, religious and anti-Western political movements arose. When these movements employed force, their rules of combat were often vicious and betrayed international conventions. Neo-conservatives identified the problem as a lack of international institutions capable of establishing a new global order in this situation, and doubted the commitment of its “old” European allies to the new global responsibilities of the “free” world. In such a situation, they argued, a burden of leadership had been placed on America, a burden from which it could not shirk. They also argued and believed that no nation was more guided by fundamentally correct values than the United States and that this was a unique occasion to which America had to rise to bring about a new world order.

Others see a different picture, one of American imperialism. Gary Dorrien describes a history of such imperialism:

The issue of American imperialism is loaded with irony and outright contradiction. Americans are very short on imperial consciousness, yet Theodore Roosevelt was not wrong in reminding his audiences that America’s entire national history was one of expansion. Native American reservations amount to colonies; “manifest destiny” was a reigning American myth for generations; and for almost ninety years many U.S. leaders wanted to create a Western empire that extended the U.S. slave system throughout the Caribbean. From the Monroe Doctrine onward, American presidents have issued doctrines about what a country has to do to deserve an invasion from the United States. Theodore Roosevelt’s corollary to the Monroe Doctrine declared that the U.S. reserved the right to invade any Latin American country that engaged in “flagrant wrongdoing.”

Long before the Roosevelt Corollary of 1906, the U.S. had an ample record of intervening in Latin America. Afterwards, up to World War II, it added interventions in Colombia, Panama, Honduras, the Dominican Republic, Cuba, Nicaragua, Haiti, Mexico, and Guatemala. In the classic sense of the term that applies only to the colonization of (overseas) territories, America’s formal dance with empire began in 1898, when it annexed and occupied Cuba, Puerto Rico, Guam, the Philippines, and the Hawaiian islands. In the modern sense of the term that applies to global military networks, the United States became a world empire after World War II, beginning with its new military bases in western Germany, Japan, Korea, and the eastern Mediterranean.

The United States does have an imperial history and is presently conducting an imperial enterprise. As Dorrien, however, further points out,

It does not exercise direct dominion over conquered peoples; it does not formally rule an extensive group of countries under a single sovereign authority. [Rather] it assumes imperial responsibilities and enforces its idea of world order in America’s interest. The U.S. rewards or punishes nations on the basis of their willingness to create open markets, support American policies, and establish pro-American governments.

American Relationships with the Middle East and with Oil

George H.W. Bush, Jim Baker, Colin Powell, Dick Cheney and others involved with the current administration established an especially cordial and mutually financially beneficial relationship with the Saudis. The Saudis own 7% of U.S. investments, $820 billion worth. The Saudis, with James Bath as facilitator, funded George W. Bush’s business misadventures. The war in Afghanistan was for the purpose of establishing a gas pipeline through the country.

In terms of balance of payments, the United States is the largest debtor nation in the world. A balance of payment deficit arises when a country imports more than it exports. In the case of the United States, imports of oil contribute greatly to the country’s balance of payments deficits.
An important reason the United States is able to consistently run balance of payment deficits, the annual size of which is steadily increasing, and also a reason the United States is able to finance its rapidly growing budget deficits, is that foreigners reinvest the dollars they earn in U.S. treasuries, real estate and investments. The United States is dependent on Saudi Arabia for oil and the United States is also dependent on Saudi Arabia for reinvesting the American dollars it earns in the United States. America’s dependence on Middle East oil is not a short-term issue. America will become increasingly dependent on oil from Saudi Arabia (number one in oil reserves) and Iraq (number two in oil reserves).

The Saudi regime is known to be one of the most oppressive in the Middle East. The presence of U.S. military bases in Arabia is resented because Arabia, and especially Mecca, are holy places for the Islamic people. In addition, those who wish to see political change in Arabia resent the support the United States gives to the Saudi regime. All of this makes Saudi Arabia an unstable base of operations for the United States in the Middle East. Further, before 9/11, the presence of hostile regimes in Iran, Syria, Afghanistan (under the Taliban), and Iraq (under Saddam Hussein) limited U.S. options in the Middle East. September 11 changed this. That event gave the United States a reason to invade Iraq and now the United States can operate out of Iraq.

Was the U.S. action in Iraq guided by idealistic considerations, such as stopping terrorism and establishing democratic governments, or by realistic considerations, such as acquiring a stable location for U.S. military bases in the Middle East and also stable access to Middle East oil reserves? The neo-conservatives are often described as being guided by idealistic rather than realistic principles. As the policy advisors who led the United States into Afghanistan, and then Iraq, the neo-conservatives wish to establish democratic societies with free market economies that would provide a model to other nations in the Middle East. Yet these reasons would not by themselves have justified an invasion of Iraq. The more important reason for attacking Saddam Hussein was to establish a government that would serve America’s long-term strategic interests in the Middle East.

With regard to the observations Michael Moore makes about the cozy relations between the Bush administration and Saudi Arabia, there would not be such close relations if that country was still predominantly a land of Bedouin herdsmen. The cozy relations are about oil and about petrodollars, billions and billions, even trillions of them. This seems vile, but can we cast stones? For those of us who live in industrialized societies, petroleum is essential to our daily lives and to the entire economic enterprise. We cannot escape the fact that complex cultural, religious, political, and now military and para-military (terrorist) issues, are implicated in supplying the world with oil.

**What's It All About? The Military-Industrial Complex, the Hidden Costs of War and the Exploitation of the Underclass**

Soldiers drive tanks into battle listening through their earphones to heavy metal music to lend drama to their charge. A group of American soldiers sings a song about how they want a city to “Burn Baby Burn, Let the Mother F____er Burn. On Christmas Eve, soldiers go out to raid a home and find a man whom they capture. The women in the home cry and say tearfully “He didn't do anything.” The American soldiers return to their quarters to celebrate around a Christmas tree with Santa Claus. In another scene, bloody pictures of injured Iraqis are shown. An Iraqi woman shrieks in despair, even in despair of Allah, when her home is destroyed in combat. Caskets of American soldiers are shown as is a military hospital with injured American soldiers . . . some with no hands, some with no legs, others in constant pain and mentally disturbed. Reflecting on these scenes of tragedy, Moore, as narrator of the film, asks “What’s it all about?” And the answer? The scene shifts to a business conference where company representatives vie for lucrative U.S. government-funded contracts in Iraq. A truck driver for a private American contractor in Iraq makes $10,000 a month, an American soldier $3,000. Moore observes that fear and war and military spending maintain a hierarchical society. The war is as much against America’s own people as against any enemy. Soldiers are recruited from the poor and unemployed. A Midwestern mother who was a super-patriot reads a letter from her son who was killed in combat. In the letter, her son states that it was wrong to go to war in Iraq. The mother laments the loss of her son and journeys to the White House where she focuses her anger on those who unnecessarily took the life of her son. In the final scene Bush bungles his way through the saying, “Fool me once, shame on you; fool me twice, shame on me,” a clear message that Americans should not be fooled again in Bush’s second campaign for the Presidency.

There are many messages in this sequence, messages that are painful ones for all people. “War is H ell,” “War is unjust and kills innocent people.” “Soldiers are
trained to dehumanize the enemy and make them an abstraction, so it is okay for the ‘enemy’ to burn.” “Wars are accompanied by war profiteering, the spoils of war.” “Disproportionately, members of the underclass make up the combat forces of armies.” “Patriotism sometimes loses its meaning when a family member loses his or her life in a questionable war.” “People die in war and people are physically and mentally maimed.” “The conditions of life in combat zones for civilians are often desperate.” “War is accompanied by grief, anger, despair, cruelty, and callousness.”

These things are true about war in general, but what about this particular war in Iraq? The reasons given for the war—weapons of mass destruction, security threat to the United States, links between Saddam Hussein and global terrorism—have all proven to be insufficient because they were based on false information. The present questions that arise concern whether the Bush administration, and Blair of the United Kingdom, relied on this false information, whether they induced the production of the false information to justify a pre-determined course of action, or whether they used information favorable to their public arguments for war, without relying on it and without fully examining its truth or falsity, in order to take advantage of the crisis of 9/11 to achieve certain strategic objectives in the Persian Gulf region and Central Asia.

There are two sets of strategic objectives advanced by those who planned the war that would have justified the war regardless of the immediacy of the threats presented by Saddam Hussein. September 11, 2001, provided the opportunity for policy makers in the Bush administration to make a preemptive strike to achieve these objectives. One set was to stabilize the Middle East and assure access to oil by removing an unfriendly government and replacing it with a friendly one. The other set, not unrelated to the first, was to establish a model of democracy and development that would transform the culture and politics of the Middle East.

Since the end of the Cold War, geo-political considerations have come to dominate international political thinking. In the Cold War, it was the First World against Communism wherever it existed. In a uni-polar world, one dominated by the United States and its sometimes-fragile allies, the issue is control over critical areas of the world to assure stability for commerce and security. Such thinking is evident in the planning of the neo-conservatives as is shown in the now famous 1992 draft of the “Defence Planning Guidance” written for the U.S. Defense Department by Paul Wolfowitz. The guidance was essentially a blueprint for the strategies followed in the present Bush administration. It contains these statements:

- The number one objective of U.S. post-Cold War political and military strategy should be preventing the emergence of a rival superpower.

- Our first objective is to prevent the re-emergence of a new rival. This is a dominant consideration underlying the new regional defense strategy and requires that we endeavor to prevent any hostile power from dominating a region whose resources would, under consolidated control, be sufficient to generate global power. These regions include Western Europe, East Asia, the territory of the former Soviet Union, and Southwest Asia.

- There are three additional aspects to this objective. First the U.S. must show the leadership necessary to establish and protect a new order that holds the promise of convincing potential competitors that they need not aspire to a greater role or pursue a more aggressive posture to protect their legitimate interests. Second, in the non-defense areas, we must account sufficiently for the interests of the advanced industrial nations to discourage them from challenging our leadership or seeking to overturn the established political and economic order. Finally, we must maintain the mechanisms for deterring potential competitors from even aspiring to a larger regional or global role.”

- Another major U.S. objective should be to safeguard U.S. interests and promote American values.

According to the draft document, the U.S. should aim “to address sources of regional conflict and instability in such a way as to promote increasing respect for international law, limit international violence, and encourage the spread of democratic forms of government and open economic systems.”

The draft outlines several scenarios in which U.S. interests could be threatened by regional conflict: “access to vital raw materials, primarily Persian Gulf oil; proliferation of weapons of mass destruction and ballistic missiles, threats to U.S. citizens from terrorism or regional or local conflict, and threats to U.S. society from narcotics trafficking.”

The draft relies on seven scenarios in potential trouble spots to make its argument — with the primary case studies being Iraq and North Korea.

- If necessary, the United States must be prepared to take unilateral action.

There is no mention in the draft document of taking collective action through the United Nations. The document states that coalitions “hold considerable promise for promoting collective action,” but it also states the U.S. “should expect future coalitions to be ad hoc assemblies” formed to deal with a particular crisis and which may not outlive the resolution of the crisis.

The document states that what is most important is “the sense that the world order is ultimately backed by the U.S.” and that “the United States
should be postured to act independently when collective action cannot be orchestrated" or in a crisis that calls for quick response.8

Such thinking is embraced not only by neo-conservative, Republican thinkers, but also by important Democratic analysts. Zbigniew Brezinski, foreign policy advisor to President Carter, in his 1997 book The Grand Chessboard: American Primacy and its Geostrategic Imperatives offers a similar view of American geopolitical concerns. In this book, Brezinski stresses the importance of Central Asia and the importance of stabilizing the region with particular attention to certain key nations, the Ukraine, Uzbekistan, Turkey and Iran, two of which are immediate neighbors of Iraq, and of controlling access to Persian Gulf oil. He observes that Americans are hesitant to project their power into the world and that something like a Pearl Harbor was needed to awaken Americans to the need to stay involved and to pursue essential international objectives. He warns, “America’s withdrawal from the world or because of the sudden emergence of a successful rival—would produce massive international instability. It would prompt global anarchy.”9 9/11 became the new Pearl Harbor for many Americans.

Michael M oore is right that against such a set of considerations as those presented by Wolfowitz and Brezinski, lives of the common folk that are consumed in war are secondary. Further, M oore is right that only a hierarchically based society can project the kind of power needed to achieve such objectives.

The tragedy of these effects is not necessarily lost on these geopolitical “realists.” Yet, despite these tragic effects, they feel that it is necessary for America to project such power in the world and to not let another rival arise until a global order has been established based on international law, global commerce, and democratic values.

Conclusion

Does M ichael M oore speak the truth? He speaks the truth about the world in which we live and about the projection of American power and its view of economic, political and cultural order.

Perhaps M ichael M oore does not speak the truth when he implies that if America did not act this way we would live in a world at ease with people peacefully seeking and fulfilling their own destinies. Conditions in the world are difficult and the future is menacing. N all Ferguson, in the December 2, 2001 edition of The New York Times Magazine, in an article called “2011” wrote: “Ten years from now, historians will look back and see the events of September 11 as mere ripples in a tidal wave of terrorism and political fragmentation.” He cites these key trends as reasons for this:

(i) rise in terrorism, (ii) economic downturn (asset bubble collapse, widening economic inequality and resulting tensions, stratified markets, decline in oil supplies), (iii) change of “American power from informal to formal imperialism,” (iv) and political fragmentation as ethnic, national, and religious conflicts result in separatist parties, civil wars, division of traditional nation states and ungovernable regions not subject to central control by traditional nation states.10

M aurice Strong echoes and enlarges upon Ferguson’s vision in his “Report to the Shareholders,” in Where on Earth Are We Going? when he forecasts the state of the world in 2031 if things don’t change. He, like Ferguson, foresees growing political fragmentation and the breakdown of central governments and global governance as a whole. He foresees dire energy problems, a flourishing trade in nuclear materials and dangers resulting from sabotage of nuclear plants, power transmission lines and oil and gas pipelines. And he foresees a nightmare of ecological devastation.11

In this post-Cold War world of disorder, we cannot dismiss the need for leadership, nor can we excuse misguided leadership.

America’s role in the future of the planet is of central importance. We cannot answer the question “Where are we?” without thinking about America and its role in the world. Especially for those of us who are Americans, we have a responsibility to shape this role.

3 According to the American Heritage Dictionary, this term refers to “a. A smug, ignorant, especially middle-class person who is regarded as being indifferent or antagonistic to artistic and cultural values. b. One who lacks knowledge in a specific area.”
4 H ertsgaard, Eagle’s Shadow, 21.
5 Ibid., 5-6.
6 D orrien, “Imperial Designs.”
7 Ibid.
If we are to answer “Where are we?”, it is important to ask “Who are we?”

In a set of statistics, often attributed to Phillip M. Harter of the Stanford University Medical School, the human population was described this way:

**The Earth as a Village**

If we could shrink the earth’s population to a village of precisely 100 people, with all the existing human ratios remaining the same, it would look something like the following. There would be:

- 57 Asians
- 21 Europeans; 14 from the Western Hemisphere, both north and south
- 8 Africans
- 52 would be female
- 48 would be male
- 70 would be non-white
- 30 would be white
- 70 would be non-Christian
- 30 would be Christian
- 89 would be heterosexual
- 11 would be homosexual
- 6 people would possess 59% of the entire world’s wealth and all 6 would be from the United States.
- 80 would live in substandard housing
- 70 would be unable to read
- 50 would suffer from malnutrition
- 1 would be near death; 1 would be near birth
- 1 (yes, only 1) would have a college education
- 1 would own a computer

When people inquired of Dr. Harter where he obtained his numbers, he replied that, like others, he had first received them by e-mail. The President of Stanford, Gerhard Casper, asked people at the university to check out the numbers and they found them sufficiently close that President Casper later used them in a speech.
Balu, Engleken & Grosso of England, using available statistical sources, undertook to research the numbers in the Harter e-mail. Here is what they found:

**The Global Village**

If we could shrink the earth’s population to a village of precisely 100 people, with all the existing human ratios remaining the same, there would be:

- 60 Asians
- 12 Europeans
- 15 from the Western Hemisphere (9 Latin Americans, 5 North Americans, and 1 Oceanian)
- 13 Africans

Source: UN Department of Economic and Social Affairs, Population Division [World Population Prospects: The 2000 Revision]

- 50 would be female
- 50 would be male

Source: U.S. Bureau of the Census International Data Base [Table 094: Midyear Population by Age and Sex 2001]

- 80 would be non-white
- 20 would be white

Source: U.S. Bureau of the Census International Data Base [Table 001: Total Midyear Population 2001] (assuming the populations of South America, Asia, and Africa are ‘non-white’ and those of North America, Europe, and Oceania are ‘white.’)

- 67 would be non-Christian
- 33 would be Christian


- 20 people would earn 89% of the entire world’s wealth

Source: The International Herald Tribune - February 5, 1999 (cited in the World Income Inequality table)

- 25 would live in substandard housing

Source: Habitat for Humanity International [Why Habitat is Needed]

- 17 would be unable to read

Source: UNICEF [The State of the World's Children 1999]

- 13 would suffer from malnutrition

Source: UN Food and Agriculture Organization report (cited at OBGYN.net)

- 1 would die within the year
- 2 would give birth within the year

Source: U.S. Census Bureau [World Vital Events Per Time Unit 2001]

- 2 would have a college education

Source: UNESCO Institute for Statistics, World Education Indicators [Gross Enrollment Ratio by Sex]

- 4 would own a computer

Source: UN Human Development Indicators [Access to Information and Communications 1995]

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1. Rekha Balu, “Please Don't Forward This E-mail! The story of an Accidental Web Celebrity,” available at www.fastcompany.com/articles/2001/05/email.html, (accessed 7/19/04.)
2. Ibid.
Given the transformations manifested on the planet within recent years, I believe Earth is entering a new era, a new mode of existence. Thomas Berry, among others, calls this emerging era the Ecozoic Era—a time when all species live in a mutually enhancing relationship with one another. Three factors are precipitating the transition from the Cenozoic to the Ecozoic Era. The transition to the Ecozoic Era is being fostered by: the global psycho-spiritual presence of the human species, the declining rate of production of fossil fuels, and the finite capacity of the planet's potable water supply.

**Human Presence**

The human species now plays a critical role in self-consciously shaping the future of the planet. Never before in Earth's history has a single species had the physical capacity and the psychic presence to play such an active role in determining the unfolding directions of the future. The scale of human presence has increased almost six-fold since the beginning of the twentieth century. Of all the humans who have ever lived, more are alive today than have died—put another way, of all the human creatures who have ever lived on Earth, more than half are alive now. With the capacities of modern technology including telecommunications, mass production, large-scale construction, physical and bio-medical research and space exploration, the human species has amassed creative and destructive potentials unmatched by any single species in the history of the planet. In terms of psychic presence, the human species has obtained reflective capacities fostering cooperation and promoting discord on a global level as well as allowing understanding of patterns at the micro-cosmic and macro-cosmic levels.

**Energy**

Creative new relationships to stored energy, such as oil and coal, and renewable energy drive the Ecozoic Era. Social dependence on fossil fuels is typified by an account from the early days of the oil age. During early June of 1887, 70,000 people poured into Findlay, Ohio to participate in an historic 3-day celebration.\(^1\) Fifty-eight arches spanned Main Street, each adorned by hundreds of gas jets, each flanked by varicolored globes. Every principal street was piped with open jets which could turn the night into day. The entire spectacle was to celebrate the bonanza of the natural gas that had been tapped near the agricultural town of 4,633 people. In a speech at the height of the celebration, Professor Isaac Newton Vail, an undisputed authority of his time, proclaimed that the gas belched from the molten center of Earth, where it was continuously being manufactured by nature. Indeed he claimed that the more it was used, the more would be generated by nature. For another century, human civilization continued to tap the stored up energies of the planet's fossil fuels as though their availability was unending.

While technology and research on a global scale continued to release ever increasing amounts of liquid and gaseous hydrocarbons during the early years of the twentieth century, the United States reached the limits of its annual productive capacities by the late 1970s.\(^2\) Because of the way that the oil reserves are stored in the ground under the pressure of gas or water, simply drilling additional wells does not necessarily insure a proportional increases in production even in plentiful oil fields. By the early part of the twenty-first century, the global daily production rates have achieved or are approaching their natural limits.\(^3\) In contradiction to the bold assertion of Professor Vail in Findlay, Earth is not, in any substantial way, producing additional fossil fuel reserves for use in the foreseeable future. Thus, economic growth patterns based on stored energy will no longer be possible for generations.
**Water**

The realization of the need to preserve and enhance natural water supplies and their regenerative processes offers a doorway into large-scale cooperation and understanding across political boundaries and economic classes. One of the unique features of Earth, that which provides the unique Blue Marble appearance when seen rising over its moon’s horizon, comes from the presence of liquid water on the surface of the planet, the water vapor in the air and the pools of aquifers within the rocky underground. Throughout the history of the human species, civilizations have flourished along the banks of the flowing fresh-water rivers and lakes. When the size of the human species was relatively small, adequate potable water was usually available to settled populations; or bands of humans were able to migrate from place to place as the availability of water changed. The problem now is that, while the size of the human species has increased greatly, the quantity of fresh water on the planet has not changed. In fact, for all intents and purposes, the quantity of fresh water now on Earth is the same as it was a thousand years ago, when human population was about 350 million. The production of substantial additional quantities of fresh water seems unlikely by either natural or artificial forces.

Marq de Villiers, in his book *Water*, reviews the global situation of nations and communities relative to their water resources. Like other authors and agency reports, he clearly documents how in country after country, entire river basins are becoming unusable to living creatures and how community after community has to rely on ever more costly means of water purification to meet even their basic needs. Indeed, he asserts, most if not all of the global unrest, especially in the Middle East, has more to do with the desire of citizens to have access to adequate and affordable water supplies, than to ideological differences or economic disparities.4

**Point of Transition to the Ecozoic Era**

Throughout Earth’s history, when energy levels and resource availability have reached insurmountable limits, modes of existence have changed and entire new eras have emerged. When the nutrient-rich seas became filled with living forms that depleted the stores of life-giving hydrocarbons, some creatures found ways to harness sunlight directly through photosynthesis and the eras of the plants began.5 When the dinosaur population could no longer be sustained by decreasing fern resources, the mammals and the flowering plants established a mutual interaction that marked the beginning of the Cenozoic Era.

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2 World Resources Institute, “Oil as a finite resource: When is global production likely to peak?”, www.wri.org/wri/climate/jm_oil_000.html, March 2000.
The Great Conversation

By Richard Lambert

I am writing from a barrier island six miles at sea off the coast of New Jersey. The dominant attractive power is the natural world as shown most radiantly in sun, sand, surf and sky. For a few days I am committed intentionally, with full awareness, to a different kind of listening to the voices of the natural world. This different listening is attunement to the offshore winds, the sound of surf, the flowing language of ocean waves, the wing-tip to wing-tip beauty of a seagull in flight. I invite readers to reflect and wonder and even to write down their experience.

There is attunement to the ebb and flow of waves washing the thirsting shoreline. The disturbed rhythms of the minds and bodies of so many people in our crowded cities, suffering through bumper to bumper traffic and accumulated stresses of all kinds, are restored to the ebb and flow, the give and take, the unhurried leisure, rejoicing again in living in human scale.

Let me share a story. I strolled down the beach in near solitude, and I came to a place where I was standing next to large boulders that formed a breakwater, watching waves break upon rocks in chaotic foaming. Seemingly out of nowhere, a woman stood beside me, pointing with excitement, and asked, “Do you see them?” “Do you see them?” she repeated. As I searched the waves beyond the breakwater, she exclaimed, “There they are! Two dolphins. Look!”

Quietly, I observed the dolphins showing such graceful rhythm, diving and surfacing and glinting in the sun. What I started to sense was a human presence, someone enraptured, being seized by beauty. How rare. How rare.

As we began a conversation, I felt I stood beside a woman with eyes blinking in wonderment. I speak about “how, if our eyes are not blinking in wonderment, we are asleep!” Here was a woman who had broken free of such entrapment. What a gift. What a gift! Not simply a gift that ended in those moments of brief encounter, but that became the beginning of a relationship and a yet-to-be-told, expanding story.

The same can be true for people vacationing on the ocean, whether for a few days, a week, or longer. How easy it is by the sea, standing knee deep in the shoreline surf, to begin a conversation. How quickly we can find ourselves sharing a flowing conversation in which we become more known to one another than a back-home neighborhood on the other side of a fence that has kept us separated for ten or fifteen years so that we remain strangers to one another.

Vacationing by the ocean can open us intentionally to another kind of conversation. We were blessed to share this time with our son and his wife and their two young children. Our son and his wife seek out the mountains, and the lakes, and camp sites in nature preserves. They seek to connect their children, from infancy, with the natural world. They are adventurous. For example, a few years ago, my son bicycled 4,200 miles, averaging 75 miles a day for 57 days, across the United States, while his wife drove their "RV" in a disciplined prearranged pattern to meet him at selected end-of-day meeting sites. There lives inside them this Great Conversation between the human and the natural world.

One way to reenter the Great Conversation is to become aware that everything has a voice—the wind in the trees, the wonder of moonlight, the song of the bird, and as my son reminded me after his cycling odyssey, the prayerful sighing of prairie grasses. On the ocean we have dune grasses dipping in the offshore breezes, the squawking sounds of seagulls, the roar of the surf in a storm, the soft swish of a gentle wave. Make your own list. Be like Australian Aborigines who are superbly skilled at minute observation. With minute observation you learn to listen to all the voices and enter The Great Conversation!
Twelve Understandings Concerning the Ecozoic Era

1. **The Nature of the Universe**
   - The universe as a whole is an interacting community of beings inseparably related in space and time. From its beginning the universe has had a psychic-spiritual dimension. The universe is a communion of subjects not a collection of objects.

2. **Modes of Expression**
   - The universe expresses itself at all levels through communion (intimacy, interrelatedness), differentiation (diversity), and subjectivity (interiority, self-organization).

3. **Cosmogenesis**
   - The universe is a creative, emergent, evolutionary reality that has developed from the time of the primordial flaring forth, and is still developing, through a sequence of irreversible transformations.

4. **Earth and Its Current Dilemma**
   - Earth. Earth is a one-time endowment in the unfolding story of the universe.

5. **The Current Dilemma**
   - The effects of human activity on Earth have become so pervasive and invasive that the survival and health of the Earth community now rest on decisions being made, and actions being taken, by humans.

6. **Transition to the Ecozoic Era**
   - There is a need to move from the current technozoic period where Earth is seen as resource for the benefit of humans, to an Ecozoic Era where the well-being of the entire Earth community is the primary concern.

Three Key Building Blocks

7. **The New Story**
   - The New Story, the narrative of the evolutionary development of the universe from the primordial flaring forth to the emergence of the Ecozoic Era, provides a unifying myth for all human cultures and a basis for common action in the realization of the Ecozoic Era.

8. **Bioregionalism**
   - Bioregionalism, care for Earth in its relatively self-sustaining geo-biological divisions, reorients human activity in developing sustainable modes of living, building inclusive human community, caring for the rights of other species, and preserving the health of the Earth on which all life depends.

9. **Ecological Spirituality**
   - Ecological spirituality, presence to the primal mystery and value of nature and to Earth as a single sacred community, provides a basis for revitalizing religious experience and healing the human psyche.

Special Contributors to the Ecozoic Era

10. **Women, Indigenous People, Science, and Humanistic and Religious Traditions**
    - The wisdom of women, indigenous people, science and classical humanistic and religious traditions will have an important role to play in redefining concepts of value, meaning and fulfillment, and in setting norms of conduct for the Ecozoic Era.

11. **The Earth Charter**
    - The Earth Charter provides a comprehensive set of values and principles for the realization of the Ecozoic Era.*

The Great Work

12. **The Great Work**
    - The epic task, or “Great Work,” of our time is to bring into being the Ecozoic Era. It is a task in which everyone is involved and from which no one is exempt, and it will require change in every aspect of human society. On it the fate of the Earth depends, and in it lies the hope of the future.

*The Earth Charter may be viewed at www.earthcharter.org

Contributors to this Issue

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Mary Dalton lives close to the Monterey Bay National Marine Sanctuary in Santa Cruz, California. She likes to paint landscapes in watercolor and oil and draws much of her inspiration from the central coast bioregion of California. She can be reached at mayadolphin@hotmail.com

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F. Nelson Stover is a systems analyst, poet, and teacher. He is Treasurer of the Center for Ecozoic Studies and serves on the International Board of Directors of the Institute for Cultural Affairs. A collection of his poems was published in Nepal with the proceeds being used for women’s literacy training in the Himalayan foothills. He designs and leads courses dealing with contemporary social issues and the individual journey to profound consciousness. FNStover@igc.org.
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### Abundance
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Review of *The Party’s Over: Oil, War and the Fate of Industrial Societies*
Mary Dalton

### The Climate Is A-Changing
Alice Loyd

### Cricket by the Freeway
Richard Arnold

### The Truth About *FAHRENHEIT 9/11*
Herman F. Greene

### Who Are We?
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### We’re Entering the Ecozoic Era, Now!
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