

Timeline

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**Edward O. Wilson on The Future of Life
A Review by Walt Hays**

“The biospheric membrane that covers Earth, and you and me, is the miracle we have been given. And our tragedy, because a large part of it is being lost forever before we learn what it is and the best means by which it be savored and used.” Edward O. Wilson

Biologist Edward O. Wilson, one of the world's most influential scientists, has written two Pulitzer Prize-winning books. In his latest book, *The Future of Life*, he adds to material from his earlier writings to address what he considers the central issue of the 21st century—how to raise the poor of humanity to a decent standard of living without destroying most of the other life around us. While the issue of mass extinctions is not new to readers concerned about the environment, Wilson brings it home in a powerful way, combining both encyclopedic knowledge of life and communication of his love for it in a way that reaches the reader's heart.

The twentieth century was a time of great advances, but also a time of terrible wars and destruction. While preoccupied with these events, humanity was “mostly too busy to notice” that we were also decimating the natural environment, recklessly drawing down the nonrenewable resources of the planet, and “accelerating the erasure of entire ecosystems and the extinction of thousands of million-year old species.” While others have described this gloomy trend, Edward O. Wilson goes beyond documenting the problem, and lays out both a cogent case for preservation of species and a plan to achieve it. In the end, he says, “success or failure will come down to an ethical decision, one on which those now living will be judged for all generations to come.”

Wilson opens the book with a Prologue in the form of a fictional letter to deceased author and naturalist Henry David Thoreau. He briefly describes how the world has changed since 1845, when Thoreau built his shanty on Walden Pond and began his writing. Then, leading to the theme of the book, Wilson analyzes how it happened that “an amateur naturalist perched in a toy house on the edge of a ravaged woodland became the founding saint of the conservation movement.” By stripping life to its bare essentials, Wilson suggests, “. . . you hit upon an ethic with a solid feel to it: nature is ours to explore forever; it is our crucible and refuge; it is our natural home; it is all of these things. Save it, you said: in wildness is the preservation of the world.”

The letter closes by thanking “Henry, my friend,” for discovering and articulating that ethic, which Wilson describes as the foundation for what is needed to emerge from our current environmental bottleneck.

The first chapter, entitled “To the Ends of the Earth,” expands the context, with a marvelous description of the abundance and exuberance of life on Earth. It notes that some form of life exists wherever there is water, no matter how forbidding the other conditions. From places like the McMurdo Dry Valleys of Antarctica, whose soils are the “coldest, driest, and most nutritionally deficient in the world,” to the walls of volcanic hydrothermal vents on the ocean floor, where a certain bacterium reproduces best at 221 degrees F., life has searched out and inhabited every available niche. While somewhere between 1.5 and 1.8 million species have been discovered and named, estimates of the total number range from 3.6 million to over 100 million. Some are closer than we think:

“You do not have to visit distant places, or even rise from your seat, to experience the luxuriance of biodiversity. You yourself are a rainforest of a kind. There is a good chance that tiny spiderlike mites build nests at the base of your eyelashes. Fungal spores and hyphae on your toenails await the right conditions to sprout a Lilliputian forest. The vast majority of the cells in your body are not your own; they belong to bacterial and other microscopic species. More than four hundred such microbial species make their home in your mouth.”

The chapter concludes with a paean to the glory of it all, and a hint of what is to come:

“Such is the biospheric membrane that covers Earth, and you and me. It is the miracle we have been given. And our tragedy, because a large part of it is being lost forever before we learn what it is and the best means by which it can be savored and used.”

Chapter Two elaborates on our current “bottleneck” of overpopulation and consumption. To start with, for every person in the world to reach present U.S. levels of consumption would require four new planet Earths. That is with today’s population of about six billion. Considering all factors, Wilson estimates that world population will peak at the end of this century somewhere between nine and ten billion.

One sign of hope is that the worldwide average of children per woman fell from 4.3 in 1960 to 2.6 in 2000. (The number required to attain zero population growth is 2.1.) The primary factor in this decline is the gradual empowerment of women, which has led them to choose to have fewer children, a development which Wilson describes as a “fortunate, indeed almost miraculous gift of human nature to future generations.” It could have gone the other way, he notes, with liberated women choosing larger families: “Demographers of the future will, I believe, point out that humanity was saved by this one quirk in the maternal instinct.”

The chapter describes in detail how China is struggling with the tension between population and environment, and asserts that it deserves close attention, “not just as the unsteady giant whose missteps can rock the world, but also because it is so far advanced along the path to which the rest of humanity seems inexorably headed.” The next chapter, “Nature’s Last Stand,” documents in vivid and painful detail how humans have already wreaked havoc on other life. For example, while Hawaii seems like an unspoiled paradise, in actuality it is a “killing field of biological diversity”:

“When the first Polynesian voyagers put ashore around A.D. 400, the archipelago was as close to Eden as any land that ever existed. Its lush forests and fertile valleys contained no mosquitoes, no ants, no stinging wasps, no venomous snakes or spiders, and few plants with thorns or poisons. All these infelicities are abundant now, having been introduced by human commerce, both deliberately and accidentally.”

Wilson gives dramatic examples of how various factors have interacted to cause extinctions, the main ones being summarized by conservation biologists under the acronym HIPPO:

HABITAT DESTRUCTION

INVASIVE SPECIES

POLLUTION

POPULATION

OVERHARVESTING

He then notes that while tropical rain-forests are the “headquarters of global diversity,” they are also the “leading abattoir of extinction,” describing the process in excruciating detail. He explains how global warming will accelerate extinction even further, by changing habitats much faster than species can adapt. He also gives specific examples of the destructiveness of invasive species, such as the chestnut fungus, accidentally introduced into New York on imported logs of Asian chestnut, which virtually eliminated the American chestnut tree. Finally, he imagines that if present trends continue, the most memorable heritage of our century could be an “Age of Loneliness.” The testament we leave might conclude: “Accept our apologies and this audiovisual library that illustrates the wondrous world that used to be.”

In Chapter Four, entitled “The Planetary Killer,” Wilson describes *Homo sapiens* as a “serial killer of the biosphere,” with evidence that is fascinating as well as chilling. Throughout history, wherever people entered a virgin environment, they immediately set about wiping out species, starting with “the big, the slow, and the tasty.” One of the most interesting examples is New Zealand, which Wilson says was a “vast biological wonderland” before the Maoris came ashore in the late thirteenth century. Because it is remote from Australia and other landmasses, the islands lacked native mammals. As a result, large, flightless birds called moas, with an eagle as their only known predator, evolved and radiated into niches that would otherwise have been filled by creatures such as woodchucks, rabbits, deer, and even rhinos. Upon the Maoris’ arrival, however, they systematically butchered the moas, with the result that by the middle of the fourteenth century they were all gone.

With the exception of well-known episodes of mass extinction that occurred many millions of years ago, the prehuman extinction rate averaged one species per million per year. For the reasons described, however, the rate has now jumped to between one thousand and ten thousand species per million per year. Wilson summarizes by stating that “the somber archaeology of vanished species has taught us the following lessons:

- The noble savage never existed.

- Eden occupied was a slaughterhouse.
- Paradise found is paradise lost.”

The next two chapters develop the reasons for halting the slaughter. In answering the question raised by Chapter Five, “How Much Is The Biosphere Worth?,” Wilson notes that in 1997 an international team of economists and scientists calculated the value of services provided to humanity by the natural environment at \$33 trillion per year. As a case in point, when development of the Catskill Mountains began to degrade New York’s water supply, the citizens passed a major bond issue to rescue forested land from further development, thereby enabling them to enjoy “the double gift from nature in perpetuity of clean water at low cost and a beautiful recreational area at no cost.”

Preservation of species may also be critical for agriculture. According to Wilson, the world’s food supply “hangs by a slender thread of biodiversity.” While only three domesticated plants (wheat, rice, and corn) currently stand between humanity and starvation, at least ten thousand wild plants could be adapted as domestic crops— if they survive. Moreover, “all the quarter million plant species—in fact, all species of organisms—are potential donors of genes that can be transferred by genetic engineering into crop species in order to improve their performance.” Wilson acknowledges and summarizes legitimate concerns about genetic engineering, but states that most scientists and economists who have studied both sides of the argument agree that the benefits outweigh the risks. They envision an “evergreen” revolution, which would lift food production above the level attained by the green revolution of the 1960s, “using technology and regulatory policy more advanced and even safer than those now in existence.”

Biodiversity is also vital to medicine. In the United States, 40 percent of all prescriptions and nine out of the ten leading prescription drugs are derived from organisms, which over millions of years have evolved mechanisms to fight various ailments. Yet only a tiny fraction of biodiversity has been utilized, and its potential is being rapidly destroyed. As just one example, it turns out that the deadly toxin secreted by the poison dart frog of Central and South America is two hundred times more effective than opium in suppressing pain, without harmful side effects. And while the natural substance is too toxic for use on humans, chemists first isolated the key molecule and eventually synthesized a similar one that eliminated the toxicity but retained the valuable properties. However, when scientists set out to collect frog toxin for chemical analysis, one of two rainforest sites it occupied had been cleared and replaced by banana plantations, supporting Wilson’s assertion that the search for natural medicines is “a race between science and extinction.”

Studies also show that sustainable harvesting of rainforest products can generate more income than clearing the area for farming or ranching. One such study demonstrated that a single harvest of wild-grown medicinals from a tropical forest plot in Belize was worth

as much as \$3,327 per hectare (2.5 acres), while other researchers estimated that tropical forest converted to farmland yielded only \$228 per hectare in Guatemala. And Wilson adds that the value of sustainable use can be boosted even higher when “plant and animal food products, fibers, carbon credit trades, and ecotourism are added to the mix.”

Wilson believes there is a still deeper reason to save diversity, which is the subject of Chapter Six, entitled “For the Love of Life.” Some argue that destruction of species doesn’t matter, because our technology will enable us to engineer new ones better suited to human needs. Wilson calls that a terrible gamble. Supposing for the sake of argument that it can be done, however, he offers the following response:

“With that distant potential in mind, should we go ahead, and for short-term gain, allow the original species and eco-systems to slip away? Yes? Erase Earth’s living history? Then also burn the libraries and art galleries, make cordwood of the musical instruments, pulp the musical scores, erase Shakespeare, Beethoven, and Goethe, and the Beatles too, because all these—or at least fairly good substitutes— can be re-created.”

“The issue,” according to Wilson, “like all great decisions, is moral,” and he analyzes the values that make the case for preservation. For one thing, each species is a “masterpiece” which offers “an endless bounty of knowledge and aesthetic pleasure.” Another value is the genetic unity of all life—we all descended from the same distant life form. Still another is stewardship, which Wilson believes arises from emotions “programmed in the very genes of human social behavior.”

Wilson also elaborates on the theme of one of his earlier books, *Biophilia*, which sets forth the hypothesis that humans will instinctively love nonhuman life if given knowledge of it. That hypothesis is supported by many studies showing that exposure to natural settings relieves stress, and Wilson argues that many of the common ailments of modern society could be delayed or even avoided by reconnection to the natural world. After these impassioned arguments, the reader can hardly wait for the final chapter, entitled “The Solution.” Wilson is “guardedly optimistic” that such a solution exists, because “the problem is well understood, we have a grip on its dimensions and magnitude, and a workable strategy has begun to take shape.”

An important first step is to “disarm,” by dropping the stereotypes that environmentalists and “people-firsters” pin on each other. Wilson provides amusing examples, and confides that after years of dealing with them he is “a little battle- fatigued.” Experience with socialism has proven that it is not the answer, and “the juggernaut of technology-based capitalism will not be stopped”— but its direction can be changed through the development of a long-term environmental ethic. Science can help in many ways, such as raising per-capita food production, decreasing consumption of energy and materials, and giving us better information about the condition of the planet. Religious leaders, having been silent on the issue for long, are also starting to interpret sacred texts as calling for stewardship of creation.

Over the last two decades, scientists and conservation professionals have put together a strategy for protection of most remaining ecosystems and species, the key points of which are the following (each elaborated in the book):

- *Salvage immediately the world's hotspots, those habitats that are both at the greatest risk and shelter the largest concentration of species found nowhere else.*
- *Keep intact the five remaining frontier forests [e.g., the Amazon, the Congo block of Africa, and northern temperate forests], which are the last true wildernesses on the land and the home to an additional large fraction of Earth's biological diversity.*
- *Cease all logging of old-growth forests everywhere.*
- *Concentrate everywhere on the lakes and river systems, which are the most threatened ecosystems of all.*
- *Define precisely the marine hotspots of the world, and assign them the same action priority as for those on the land.*
- *In order to make the conservation effort exact and cost-effective, complete mapping of the world's biological diversity...[and using such maps,] ensure that the full range of the world's ecosystems are included in a global conservation strategy.*
- *Make conservation profitable.... Give those who live in and near preserves a proprietary interest in them.*
- *Use biodiversity more effectively to benefit the world economy as a whole.*
- *Initiate restoration projects to increase the share of Earth allotted to nature. [Today about 10 percent of the land surface is protected on paper, and Wilson suggests setting a higher goal, stating that "at the risk of being called an extremist, which on this topic I freely admit I am, let me suggest 50 percent."]*
- *Increase the capacity of botanical gardens and zoos to breed endangered species.*
- *Support population planning.*

With these strategies, according to Wilson, global conservation could be accomplished for \$30 billion, one-thousandth of the annual world domestic product of \$30 trillion. One element, the protection and management of existing natural preserves, could be financed by a one-cent-per-cup tax on coffee.

Accomplishment of the strategy will require cooperation among three groups—the private sector, government, and science and technology. Wilson relates powerful examples of how nongovernmental organizations (NGOs) concerned with the environment (e.g., the

World Wildlife Fund, The Nature Conservancy, and Conservation International), whose role Wilson describes as recently as the 1970s as just “evangelists and beggars,” now operate more like the most successful businesses and have grown strong enough to initiate significant preservation actions on their own.

The \$30 billion cost of carrying out the total strategy, however, while cheap in relation to world domestic product, is more than the strongest NGOs can afford, so governments will eventually have to “take over the heavy lifting.” An important first step in that direction would be to end subsidies that aid individual industries at the expense of both the environment and the country as a whole. A 1998 study estimated annual subsidies worldwide at \$390 billion to \$520 billion for agriculture (e.g., the recently passed U.S. Farm Bill), \$110 billion for fossil fuels and nuclear energy, and \$220 billion for water. These and other subsidies combined exceed \$2 trillion. The average American alone pays \$2,000 a year in subsidies.

Governments can also play a vital role in entering into treaties that protect the environment, such as the Montreal Protocol to protect the ozone layer, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and the Kyoto Treaty (rejected by the current administration). The strength of a country’s conservation ethic is also measured by the wisdom and effectiveness of its legislation, and Wilson contends that the Endangered Species Act, whose implementation he describes, is the most important conservation law in the history of the United States.

“At the risk of seeming politically correct,” Wilson also offers a tribute to nonviolent protesters, like Julia Butterfly Hill, who lived 180 feet up in a redwood tree for two years in an attempt to save the surrounding forest. He describes such protestors as “the early warning system for the natural economy,” and “the living world’s immunological response.”

The central problem of the new century, Wilson repeats, is how to raise the poor to a decent standard of living while preserving as much of the rest of life as possible. He expresses hope that his book justifies a conviction that the problem can be solved: *“In the end, however, success or failure will come down to an ethical decision. I believe we will choose wisely. A civilization able to envision God and to embark on the colonization of space will surely find the way to save the integrity of this planet and the magnificent life it harbors.”*

The Future of Life by Edward O. Wilson
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Let the Wind Blow and the Sun Shine

By Mac Lawrence

Concerned about America’s dependence on petroleum? Tired of handing over \$100 billion to foreign countries—including \$2 billion to Saddam Hussein—and another \$100

billion for our military to keep the foreign oil flowing? Think it's a bummer to dole out \$35 billion in the next 10 years to subsidize our oil, coal, and nuclear producers?

Everybody knows we should drive cars that get better mileage, use compact fluorescent light bulbs, and buy energy-efficient appliances. But what about wind power and solar to replace some of the traditional sources of energy we now use and which contribute to global warming and pollution?

Turns out that wind power is the fastest growing energy industry in the world, and America is a very windy place—it's been called the Persian Gulf of wind. So far, California has the most extensive wind farms in the country, but ranks only seventeenth on the list of windiest states. Wind farms are appearing all over the U.S., with a heavy concentration in the Midwest as farmers find that wind turbines on their land bring in good money from the energy companies that install and run them. Last year wind power in the U.S. generated energy equal to that produced by six coal-fired plants, all without coal's pollution and without ripping up land and tearing down mountains. Still, we are far behind such countries as Germany, which produces 6,000 megawatts of wind power—roughly equal to 20 coal-fired plants. Other countries with sizable wind energy projects are China, Japan, and India.

The government's Energy Information Administration has estimated what it costs to build and run new energy-producing plants. The figure for wind power has come down from 40 cents per kWh to typically under 5 cents—right there with coal and gas, and well under nuclear.

One of the knocks against both wind and solar power has been how to store the energy they produce. Now there's a good and proven solution: Use the energy to zap water, producing hydrogen, the fuel of the future. Hydrogen fuel cells are already in use everywhere, from commercial buildings to sewage treatment plants, police stations, post offices, jeeps, sub-marines, and the space shuttle. The big automobile companies are scrambling to set up hydrogen-fuel divisions. The Worldwatch Institute reports that DaimlerChrysler is devoting \$1.5 billion to fuel-cell efforts over the next few years and that the company plans to sell several dozen fuel-cell buses in Europe this year and introduce the first of a planned 100,000 fuel-cell cars in 2004. Toyota and Honda plan to introduce hydrogen-powered cars in 2003, and other major auto makers are not far behind. *Fortune* magazine noted recently: "None of this is as pie-in-the-sky as it sounds. Potent commercial forces are bringing the hydrogen economy along faster than any-one thought possible only a few years ago." William Clay Ford, chairman of Ford Motors, says hydrogen will put an end to "the 100-year reign of the internal combustion engine."

Of course, both wind and solar have been used for years where energy sources are scarce. In many locations around the world, you see solar water heaters on nearly every house. Windmills have powered machinery for centuries. Today, new designs in wind generators and solar panels have made both sources increasingly practical for general use. Japan and Germany are putting photo-voltaic solar panels on thousands of roofs. Solar electricity

will soon be brought to 400,000 Filipinos. South Africa plans 350,000 solar home installations as a central part of their post-apartheid effort to provide electricity in rural areas.

Despite their rapid growth curves, wind and solar provide less than 1 percent of the world's electricity. It will take efforts like those of Denmark and Iceland to bring these along. For example, Iceland wants to be the world's first hydrogen economy, starting with buses, then cars, then fishing vessels. Their target: a complete transition by 2040, and they are well on their way.

Today, the world leader is Denmark, with 10 percent of its energy coming from renewable sources. It started in 1976 with a national energy plan to reduce Denmark's dependence on foreign oil. The Danish government was aggressive, with subsidies for capital investments and the requirement that power companies pay a guaranteed price for energy from private sources. The people are also involved: 100,000 families in Denmark now own wind turbines or shares in wind cooperatives.

In *Bending the Curve Toward Global Sustainability*, the Stockholm Environmental Institute describes a 25 percent renewable scenario that “requires neither heroic technological assumptions nor economic disruptions.” On the contrary, they say, renewables create jobs and stimulate the economy. Their conclusion: The stumbling blocks to going renewable are institutional and political.

This reality is echoed in the book *Perverse Subsidies*. Authors Norman Myers and Jennifer Kent note that the U.S. spends \$21 billion a year to support fossil fuels and nuclear power compared to only \$55 million a year for solar research—“not quite enough to pave two miles of Interstate highway.” The U.S. market for wind power is also plagued by short-term swings in the federal wind energy tax credit.

To help renewables achieve energy independence, what is required is market access at favorable terms. That alone would help the problem of global warming, save money and natural resources, and be a step forward in the struggle against terrorism.

FGC Goes Solar

This summer marked the completion of a photovoltaic solar system on the roof of the Foundation center in Palo Alto. The system consists of 288 individual solar panels.

Each panel measures 2 by 4 feet in size and together they will deliver 18 kWh (kilowatts of electricity per hour). This will provide a large amount of the electricity used in our building. When not being used by the Foundation, the energy flows back into the Palo Alto grid and causes our meter to run backwards, which builds up credits on our electrical bill! Compared to a coal-fired generating plant, the FGC system will save about 33 tons of coal each year.

Attack Iraq?

By Mac Lawrence

“I don’t believe that America will justifiably make an unprovoked attack on another nation. It would not be consistent with what we have been as a nation or what we should be as a nation.” Dick Arme, House Majority Leader (R-TX)

As we go to press, the Bush administration is in a full-court press to convince the American people, the U.S. Congress, and the international community to back military action to unseat Saddam Hussein.

Until recently, opposition to such a war has come largely from overseas: Except for Britain, every nation in the world seems against it. Now, warning voices in the U.S. are being heard and tough questions asked. Most questions focus on a need to know more: Are we sure Iraq really has weapons of mass destruction, including nuclear? If so, would they ever use them against the U.S.? Could outrage around the Arab world at our invasion of Iraq lead to an increase in terrorism? Do we have a plan for a post-Saddam Iraq?

But an increasing number of voices question the basic wisdom of a preemptive strike on any grounds. Andrew Greeley, writing in the *Chicago Sun-Times*, uses this quote: “Never, never, never believe any war will be smooth and easy, or that anyone who embarks on that strange voyage can measure the tides and hurricanes he will encounter. The statesman who yields to war fever must realize that once the signal is given, he is no longer the master of policy but the slave of unforeseeable and uncontrollable events. Weak, incompetent, or arrogant commanders, untrustworthy allies, hostile neutrals, malignant fortune, ugly surprises, awful miscalculations—all take their seat at the Council Board.” Greeley then notes that this was written by Winston Churchill in 1930 who was reflecting on the experience of the Great Boer War of 1899 to 1902, and adds: “War is always a great mistake. War blinds even the good guys to the evil they may be doing.”

Historian Arthur Schlesinger, Jr., writing in the *Los Angeles Times*, believes that “Unilateral preventive war is neither legitimate nor moral. It is illegitimate and immoral. For more than 200 years we have not been that kind of country.” He decries “the arrogance of leaders who are sure they can predict the future,” and quotes the English historian Sir Herbert Butterfield: “The hardest strokes of heaven fall in history upon those who imagine that they can control things in a sovereign manner...gambling on a lot of risky calculations in which there must never be a single mistake.”

Ron Jacobs, author of *The Way the Wind Blew*, writes: “No nation has the right to attack another nation, no matter what their excuse. This is a basic understanding that guides the world of international relations and is one of the fundamental mechanisms that allows the various nations to maintain their tenuous balances of power. When this understanding is ignored or flouted by a government, the balance between war and peace disappears and war rules the planet.”

An editorial in the *Statesman Journal* (Salem, Oregon) notes: “A preemptive strike on Iraq would backfire on the United States while betraying the values we say this nation stands for. No matter what the polls say and no matter what Congress says, we must not take this step. We have no more right to invade Iraq on the basis of our suspicions than other countries have to attack the United States for fear that we might use nuclear weapons against them. If we attack Iraq, we have no grounds on which to criticize Russia, China, or other countries for attacking their enemies because they perceive potential threats. Such reactions could inflame the world’s trouble spots in ways we cannot imagine or control.”

Brian Foley, a professor at Widener University School of Law in Wilmington, Delaware, points out that under the UN Charter the U.S. helped draft after World War II, “Nations may use military force unilaterally only in self-defense against an armed attack, and then only until the Security Council can take over. Preemptive strikes—the crux of the ‘Bush Doctrine’—are forbidden.” Foley concludes: “Saddam poses a danger, and certainly no reasonable person would suggest that we sit by and do nothing. To initiate another Gulf War, however, given the pain it would inflict on others and the financial burdens and misery it would inflict on us, defies common sense. Instead of passively observing our leaders plan for war, we should force them to find more intelligent, more responsible, ways to deal with Iraq.”

I keep turning back to an article we ran in *Timeline* by Rear Admiral Eugene Carroll, USN (Ret), the first naval officer to serve as director of U.S. military operations for all U.S. forces in Europe and in the Middle East. He wrote the article, “Cooperation or Confrontation,” well before the terrorist attacks of 9-11. In it, Admiral Carroll warned of the hegemonic direction America was taking, refusing to cooperate within the community of nations on such important matters as the laws of the sea, the international criminal court, banning land mines, the convention protecting the rights of children. “No nation in history,” he said, “no matter how powerful, has ever secured a permanent place in the world order through military supremacy.... every nation or empire which would subjugate others will ultimately fail if they attempt to base their dominion on military force.”

Noting that America was dominant in the 20th Century, Admiral Carroll asks if “this great power could slip away, be thrown away, and the 21st Century become the anti-American Century.” It depends, he says, “on whether we attempt to perpetuate an American global hegemony as the world’s only superpower—or if we seek to exercise constructive leadership as a cooperative member in a peaceful world community governed under the rule of law. Confrontation or cooperation?”

“The notion of justified preemption runs counter to modern international law, which sanctions the use of force in self-defense only against actual—not potential—threats.”
Henry Kissinger, former Secretary of State and National Security Advisor

Journey to Afghanistan

A Report by Mike Abkin

There are upwards of 35,000 Afghan refugees living in the San Francisco Bay Area alone, and millions more around the world and in refugee camps. Many are returning to their country to help rebuild it after the almost total destruction that decades of war and intolerant governance have caused.

For several months after the U.S. bombing began, a group of Bay Area Afghan Americans began to meet with members of the Foundation to explore ways in which individuals could make a difference. We focused on the idea of reconstruction, finally narrowing our goal down to the idea of establishing a vocational training center which would enable women, unemployed Afghans, former combatants, returning refugees, and others in need of work to contribute to rebuilding their civil economy. We named our project ARISE, the Afghan Retraining Initiative for Self-Employment, formed a team of seven people—five Afghans and two non-Afghan Americans—and laid plans to fly to Kabul, the capital of Afghanistan.

Our team consisted of Mary Chopan Alamshahi and Farhad Latifi, both physicians; Nasir Durani, cofounder of the Afghan Center in Fremont, California (serving the third largest Afghan population outside of Afghanistan and Pakistan); Moosa Masody, an agriculturist; Ozeir Nassery, an industrial engineer; Nancy Glaser, a small business start-up and management consultant; and myself, a development planner and systems analyst.

Our three-week trip was supported by the Foundation for Global Community, the Afghan Center, the Center for Citizen Initiatives in San Francisco, and the World Business Academy in Ojai, California. A grant from the Charles Stewart Mott Foundation covered expenses, and we contracted with Global Exchange to help with travel arrangements.

In Kabul, our ARISE team attended dozens of meetings and talked with everyone from street kids to beggars, farmers, shop merchants, and traffic cops; ISAF (Inter-national Security Assistance Force) soldiers; government ministers, deputy ministers, and department heads; NGOs (nongovernmental organizations); international donor agencies; and even with Chairman (now President) Hamid Karzai and Zahir Shah, the former king of Afghanistan.

Our meeting with the king was held in a sitting room of his residence. We talked about his potential role in the upcoming *loya jirga* and in the transitional government to follow, U.S.-Afghan relations, our team's mission, and hopes for the future of his country. We presented him with a sculpture made by a street-child in Kabul. It was a woodcarving of a meat-grinder with the tools of war going in on one side—rifles, grenades, rockets, mines; and tools of peace coming out the other side—pens, pencils, books, spades, bread, and milk.

The timing was right for our proposal. The Afghan Interim Authority, headed by Chairman Karzai, had just given vocational training high priority for the reconstruction

and stabilization period. We returned to California with an agreement from the Education Ministry allowing us to use 2 to 3 acres of the 36-acre site of the Afghan Institute of Technology, a secondary technical school, for an ARISE vocational training center.

ARISE plans to offer curricula in building trades, electronics repair and maintenance, health care services, vocational agriculture, small business management, and office administration. The project includes a commercial operation for on-the-job training and sale of students' products to help ARISE become self-sustaining within a target of three to five years. If the center succeeds, we hope to replicate it in other parts of Afghanistan.

Before leaving Kabul, we also signed a memorandum of understanding with the Afghan Ministry of Agriculture and Livestock regarding our vocational agriculture curriculum; started on similar memoranda with the Ministry of Public Health and UNESCO; and received encouragement from the USAID office in Kabul, along with suggestions for a funding proposal. We established an ARISE office in Kabul with an Afghan person hired to prepare our site and otherwise represent us until the center is up and running.

For the Afghan Americans on the team, it was a time of poignant reacquaintance—with their families, friends, and colleagues; their homes, offices, and schools; and all the sights, sounds, tastes, and smells of Kabul and Afghanistan. Poignant because it was at once familiar, surreal, sad, and hopeful—the place they grew up, went to school, began their careers—and now, over 20 years later, it is torn asunder by war and despair. For all of us, it was heartening to recognize the hope for the future in the spirit and energy of people and in the eagerness shining from the eyes of the children so happy to be back in school.

Some Memories and Impressions

- A day trip to Istalif. We drove through the Shomali Plain, just north of Kabul, once lush with wheat, barley, mulberries, and vineyards; now flat, treeless, mined, and empty but for mud-wall ruins of villages and a few twisted vines. The workers in the fields these days are minesweepers. Located in the foothills, Istalif was once a community of 10,000 with breathtaking views of the valley. There had been curative springs, vineyards, rug crafters, jewelry makers, and a “destination restaurant.” The Taliban burned out and leveled the entire village in 1997. They also diverted the local creek and wrecked irrigation systems, completely destroying the viticulture economy. A few hundred people have trickled back, living in tents while trying to rebuild.
- A restful pause at a curative spring. A hitchhiker joined us for the half-hour ride over a rocky dirt road from the highway to Istalif. He was going to a spring noted for its curative waters, and we decided to have our picnic lunch there. One of the Global Exchange tour participants bent over playfully to let her hair dangle in the stream—and fell in!

- The students on the Kabul University campus toting wheelbarrows full of cleared debris. Mary engaged in a heated debate about where the responsibility lay for all the destruction. She argued that Afghans shouldn't be wasting their time blaming others for their misfortune, that most of the damage was wrought by Afghans fighting one another, and that Afghans should take charge and assume responsibility for reconstruction. I will not forget the drama of this lone woman without even a headscarf, much less a burqa, lecturing and gesturing to all those men surrounding her. They could not believe that she was really Afghan.
- Sohila, 18 years old, one of four women to pass the Kabul University medical school entrance exam (out of over 270 taking it), expert in using and maintaining computers (learned while with her family as refugees in Pakistan), working part time as a computer operator at the Ministry of Agriculture and Livestock to support her aging parents and herself while going to medical school.
- Four high school girls who traveled from the provinces to attend the Afghan Institute of Technology vocational school to learn auto mechanics, and, as they told us, help their country. They were the only girls among the 200 boys in the school.
- Rachel Wareham, a British woman working for Medica Mondiale, a German NGO. She arrived only a week or so before us and had rented a room in the same guest house where we stayed. Every time we saw her she seemed to have added another half-dozen projects to her list—recruiting and training women for the *loya jirga*; visiting women's prisons and advocating (with Karzai himself) for their human rights and humane treatment; arranging Tae Kwon Do classes for women; arranging driving lessons for women—and on and on. Serious, capable, quick to laugh and lend a helping hand.
- Nilab Mobarez, Mary's friend from medical school days. After practicing medicine as a refugee in Paris, she has come back to Afghanistan to start a women's hospital. While we were there, she left to escort two Afghan children to Paris for special medical treatment.
- The entire southwestern section of Kabul, reduced to mud rubble ten years ago by rocket fire from opposing warlord forces, many originally backed by the high school alma mater, Rabia Balkhi, is in ruins, salvageable bricks piled neatly for eventual reuse. But two classroom wings, rebuilt by the Taliban for religious schooling, are now used for 1200 girls (and some boys in the early grades) who have returned. Too few classrooms for too many kids—who have to sit on the floor, in hallways, or outside following the shade. Yet they seem happy and excited to be in school, shouting gleefully while playing volleyball amidst the rubble.

Photos from the trip can be viewed on the Web at:
<http://www.ofoto.com/1.jsp?m=73740643403&n=1012883788>

Terror and Oil

by Mac Lawrence

There is a 900-pound gorilla in the middle of the room. We can continue to ignore him, but he won't go away. He represents oil and the part it plays in the war on terrorism.

Since World War II, oil has dominated U.S. foreign policy. To assure a reliable, low-cost oil supply, the U.S. has overthrown elected governments, installed despots in oil-rich countries, and supported one repressive regime after another.

A good example is Saudi Arabia, America's largest foreign source, which supplies 8 percent of U.S. oil. We guarantee to support their regime internally and defend their country from outside enemies, and they guarantee to keep selling us their oil at "reasonable" prices.

How does this relate to terrorism? We keep troops in Saudi Arabia who are viewed by many Muslims as infidels who are desecrating their religion. We protect the royal family, whose sumptuous lifestyle, according to one observer, "has alienated it from the larger Saudi population and led to charges of systemic corruption." The same observer adds, "The regime has outlawed all forms of political debate in the kingdom (there is no parliament, no free speech, no political party, no right of assembly) and used its U.S.-trained security forces to quash overt expression of dissent. All these effects have generated covert opposition to the regime and occasional acts of violence."

In other words, largely because of oil we're continuing to support an environment that breeds terrorists.

Saudi Arabia is not the only place where the U.S. has pursued a similar policy. We overthrew Mossadegh in Iran in 1953 and reinstalled the Shah. After years of chafing under the Shah's repressive regime, the Iranian people finally overthrew him in a revolt led by radical Islamic clerics who wanted all U.S. influences out of their land. That made the new rulers of oil-rich Iran our enemy, so we supported Saddam Hussein in the Iraq war on Iran, only to turn against Saddam when he threatened access to the oil supplies in Kuwait as well as his own huge oil reserves in Iraq. (A number of observers believe that the current Bush administration's eagerness to dethrone Saddam has more to do with oil than with weapons of mass destruction.) We then imposed sanctions that infuriate Muslims even more, because innocent Iraqis suffer while Saddam keeps building palaces.

If you look at a map where terrorists operate in the Middle East and Central Asia, you see that, to a remarkable degree, it is a map of the principal sources of oil. Terrorist groups are active in the oil-producing countries of Saudi Arabia, Libya, Bahrain, the Gulf Emirates, Iran, Iraq, Egypt, Sudan, Algeria, as well as potential producers such as Azerbaijan, Kazakhstan, and Turkmenistan, and locations of major pipelines, such as Chechnya, Georgia, and eastern Turkey. Notes Vakhtang Kolbaya, deputy chairman of the Georgian Parliament, "You cannot discuss the violence of this region outside the context of oil."

It's clear that relying on foreign oil does not enhance our national security; in fact, the profligate use of oil itself threatens our future well-being. Yet we have a hard time facing the issue—the big gorilla— as when Congress recently blew a chance to raise the Corporate Average Fuel Economy (CAFE) standards that govern auto fuel efficiency.

One writer who hits the subject head on is Rob Nixon in his column, “A Dangerous Appetite for Oil,” in the *New York Times*: “We have to be more inventive about easing our reliance on all oil, foreign and domestic. A good start would be to reverse the administration’s rollbacks in financing research into fuel efficiency and renewable, clean energy sources. We need to build on the encouraging advances in developing wind and wave power, biomass research, transport fuels based on renewable oilseed crops, and photovoltaic modules that can convert even diffuse light into electricity. Some of the most promising progress has been in energy efficiency: household appliances that require half the energy they did a decade ago; cars that can get up to 70 miles per gallon. “Is it too much to hope that the SUV will come to be viewed as an unpatriotic relic of the ‘90s, when America’s dependence on foreign oil spiked by over 40 percent? Is it unreasonable to believe that, with commitments from Detroit and government, hybrid cars could become not just more sophisticated but sexier, narrowing the gap between fashion and conscience while saving us money at the pump? Could hybrids and fuel efficient vehicles emerge as the cars of choice for a more patriotic and worldly America?”

Nixon concludes: “Redesigning hybrids is one thing; the business of remodeling American consumer desire is an under-taking altogether more ambitious. But we do have precedents: Remember the beloved Oldsmobile 88s and Ford LTDs that lost their appeal after the 1973 Arab oil embargo? With a combination of pocketbook incentives, government stimulus, and industry inventiveness, perhaps we could start uncoupling America’s passion for the automobile from our dangerous and doomed appetite for oil. The most decisive war we can wage on behalf of national security and America’s global image is the war against our own oil gluttony.”

Muslim Youth

by Sandra Mardigian

A growing population of young Muslims is coming into its own in the next few decades. How will these millions of young Muslim men and women perceive the world and their part in it? In general, it is young people who engage in activism, whether pacifistic, terroristic, or something in between.

Alan Richards, a political economist with more than 30 years experience in the Middle East, professor of environmental studies at the University of California at Santa Cruz, and frequent consultant to the U.S. government on Middle Eastern affairs, made these observations recently in the San Francisco Chronicle:

“The most important fact to remember about the Muslim Middle East is that most people there are young: 66 percent are younger than thirty, 50 percent are younger than twenty, and 40 percent have not yet reached their 15th birthday.

“For the first time in history, many of these youths have received some education. Although they have enough education to make the old, difficult, dirty jobs unsatisfying, they have not acquired the skills to perform successfully in the modern, hypercompetitive global economy. Their governments have failed in nearly every aspect of economic policy, with the result that unemployment has soared and living standards have plummeted for more than a decade.

“Why do so many of these youths turn to radical Islamism? This is a hugely complex question, but here are a few of the pieces of the puzzle. Governments are overwhelmingly unelected and violently repressive; they provide no legitimate outlet for discontent. Governments and old ideologies, largely variations of nationalism, have failed to deliver either material goods or a sense of dignity, whether at home or abroad. Foreign policy failures, from Palestine to Kashmir to Bosnia, have further corroded states’ legitimacy. Nationalist rhetoric has been translated into the language of political Islam, a language which resonates not only with peoples’ religious sentiments, but also with their sense of national humiliation.

“As fiscally strapped governments cut funding for public services, privately funded Islamic schools, clinics, hospitals, and welfare agencies filled the breach, lending credence to the Islamists’ claim that ‘Islam is the solution!’ Such activities have been generously funded for decades by both private and public sources from the Persian Gulf.

“During the next fifteen years, another 100 million young people will be born, governmental policies are unlikely to improve dramatically, and the rising tide of despairing, angry, humiliated young men and women will continue to swell.

“Simple solutions are not at hand; obviously, doing everything possible to improve the economies of the region (including making governments more accountable) while moderating our addiction... would be prudent. The future is unlikely to be pleasant and ‘quick fixes,’ particularly of the military type, will do little to enhance our own security. Only the emergence of a life of dignity for all those angry young men and women will do that. Until then, expect the witches’ brew to bubble over—repeatedly.”

New York Times columnist Nicholas Kristoff says “humiliation, economic isolation, and U.S. foreign policy (principally American military bases in Saudi Arabia and Palestinian rights) are the three most important factors in inflaming Muslim youth to anger and terrorism.”

And Thomas Friedman, also a columnist for the *New York Times* adds: “If there is one thing I learned from [my recent] trip to Israel, Jordan, Dubai, and Indonesia, it’s this:

Thanks to the Internet and satellite TV, the world is being wired together technologically, but not socially.

“At its best, the Internet can educate more people faster than any media tool we’ve ever had. At its worst, it can make people dumber faster than any media tool we’ve ever had. . . . Because the Internet has an aura of ‘technology’ surrounding it, the uneducated believe in information from it even more. They don’t realize that the Internet, at its ugliest, is just an open sewer—an electronic conduit for untreated, unfiltered information. Worse, just when you thought you were alone with your extreme views, the Internet puts you together with a community of people from around the world who hate all the things and people you do. . . . call it the ‘I Hate You’ virus. It’s spread on the Internet and by satellite TV. It infects people’s minds. [This] can be reversed only with education, exchanges, diplomacy, and human interaction—stuff you have to upload the old fashioned way, one on one. Let’s hope it’s not too late.”

With all this in mind, it is obvious that an important front in the U.S. “war on terrorism” should be intervention of the soft variety—aimed at mitigating these factors through respectful official and citizen diplomacy, aid, education, and exchanges. It will take an enormous effort to convince Muslim youth that we know we are all in this precarious world together. That we mean well. That we are willing to share wealth. That we care about the fate of Muslim people and of their nations. And it won’t work if we don’t mean it.

A Lesson in Détente from the Insect World

An Article by Henry Fountain

The church. Business. Governments. Perhaps we are looking for trust in all the wrong places. Maybe it’s all around us, right under our noses. Or rather, right under our feet.

In the coastal soils of southern Europe, scientists have discovered a supercolony of one species of ant, stretching 3,500 miles from Portugal to the Italian Riviera. It’s the formic equivalent of the European Union, where the normal competitive barriers between ant nests have been dissolved—where every ant neighbor is a friend. It involves millions of nests and billions of insects, and is the largest cooperative unit ever found.

What is even more remarkable about this discovery, which was made by scientists from Switzerland, France, and Denmark and published in *The Proceedings of the National Academy of Sciences*, is the species of ant involved. It is the Argentine, an invasive bully of an insect, famous for aggressively taking over territory once it is introduced. Argentine ants are cut-throat—and cut-throat and cut-abdomen. They like to rip their enemies limb from limb from limb, and as often as not, those enemies are the Argentine ants in the next nest over.

But the researchers tested ants from 33 nests around Europe, and found that when two from different nests were pitted against each other, about all that occurred was a little

antenna-tapping—which is as close as Argentine ants get to being friendly. The results showed that in the 80 or so years since their introduction into Europe, the ants had managed to get over their aggressiveness toward their neighboring ants. This was true no matter how far apart the nests were.

Exactly why this happened is something of a puzzle. It is not as if the ants had permanently lost their aggressiveness—the researchers in fact discovered a second supercolony (though far smaller than the first) in Catalonia, and ants from the two supercolonies dutifully fought, usually to the death.

Some scientists have suggested that supercolonies develop when an organism goes through a genetic bottleneck, losing the inheritable cues that allow one ant to recognize another as a foreigner. Introduced species often do go through such a bottle-neck, but for the ants in this study, the loss of genetic diversity was not great.

Instead, the researchers suggest that the ants' newfound mellowness may be a function of their very aggressiveness and their ability to prosper when introduced into an area. This quickly leads to more nests, closer together, which means more unfriendly encounters with the neighbors. The costs of defending a nest from all these fights may get to the point where it is no longer worth it. Instead, those nests that cooperate—that have more members genetically disposed to accept outsiders as their own—will flourish. That genetic disposition becomes dominant over time.

Of course, a genetic disposition to accept outsiders is not quite the same thing as trust. Perhaps it might better be described as a loss of the ability to distrust.

Either way, it's better than what is going on above ground these days.

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Martin Luther King, Jr.

April 4, 1967, in Riverside Church, New York City

“A time comes when silence is betrayal. Even when pressed by the demands of inner truth, men do not easily assume the task of opposing their government's policy, especially in time of war. Nor does the human spirit move without great difficulty against all the apathy of conformist thought within one's own bosom and in the surrounding world....

“Some of us who have already begun to break the silence of the night have found that the calling to speak is often a vocation of agony, but we must speak. We must speak with all the humility that is appropriate to our limited vision, but we must speak. For we are deeply in need of a new way beyond the darkness that seems so close around us....

“We still have a choice today: nonviolent coexistence or violent coannihilation. We must move past indecision to action. If we do not act, we shall surely be dragged down the

long, dark, and shameful corridors of time reserved for those who possess power without compassion, might without morality, and strength without sight.

“Now let us begin. Now let us rededicate ourselves in the long and bitter, but beautiful struggle for a new world....”

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