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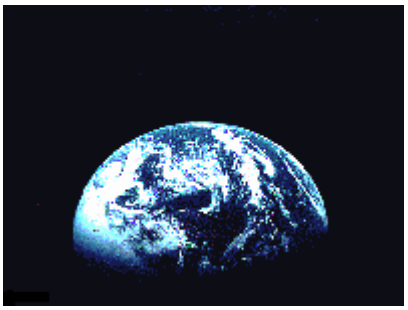
http://www.globalcommunity.org

timeline@globalcommunity.org

Phone: (650) 328 7756 Fax: (650) 328 7785



In this Issue:

SCIENCE AND SPIRITUALITY

Peter Russell

Peter Russell is an author, physicist, and futurist. *One of the first to introduce human potential seminars into the corporate field, he has been lecturing and consulting on creativity, learning, stress management, and personal development for twenty years for clients such as IBM, Apple, American Express, Shell Oil, and British Petroleum. Books include* The Global Brain *and* Waking Up In Time, *a revised edition of his earlier book* The White Hole in Time. *He is currently working on a new book with the working title* From Science to God: The Journey of a Devout Skeptic. *Some of the ideas in this book were the basis of a recent talk at the Foundation for Global Community excerpted on the following pages.*

"I've called my talk this evening "Science and Spirituality." I want to explore how these things are coming together at this stage in history in a way that was not possible until now. Generally, we have thought that science has one aspect of truth, and religion and spirituality are talking about something different, and people think one must be right and the other must be wrong. My view is that they are just two different approaches to truth.

It's interesting to look at the origin of the word "spirit." It comes from the Latin *spiritus*, which means wind, or air, or breath; vapor. What these words have in common is something that is immaterial; it can't be seen; it can't be touched; it can't be measured. This is what mind is. Science has looked at the material world of space, time, and matter—things that can be pinned down and measured. But the inner world of mind and consciousness, which can't be touched and can't be measured, is the world that spirituality has explored in depth, whereas science has almost totally ignored it until very recently.

There are good reasons for this: Science tries to be objective; it doesn't want the subjective to come in. It wants to determine what is true, independent of the mind or the mental state of the observer. According to science, the whole world seems to function very nicely without any need for consciousness. In fact, the empirical world would make much more sense if consciousness didn't exist.

Scientists find themselves in the strange position of knowing they are conscious beings, and yet there is nothing in science to predict the existence of consciousness. That's what I have become fascinated by, and that's where my new book takes off—the fact that consciousness doesn't fit into the modern scientific paradigm in which the world of space, time, matter, and energy is real. It is believed that when we fully understand the world of space, time, matter, and energy, then we will understand the whole universe and be able to explain everything. That's the standard view. But there is absolutely nothing in that worldview that predicts that any living creature, animal, or human being will be conscious. Nothing. Yet, given that we are conscious, it's the one thing we cannot doubt.

That was Descartes' idea: *Cogito, ergo sum* (I think, therefore, I am). It is often

thought he meant "My thinking *gives* me existence," but that isn't quite accurate. He was saying, "My thinking *proves* my existence." Descartes was looking for absolute truth, and he invented what he called "the method of doubt." He said, "Whatever is absolutely true must be absolutely beyond a doubt," and set to work to determine what there was that he could not doubt. He found that he could doubt any philosophy; he could doubt any idea; he could doubt anything anybody said; he could doubt his own thinking; he could doubt his feelings; he could doubt what he was seeing. About the only thing he couldn't doubt was that he was doubting—and that he was actually having experiences. Therefore, the one thing he could not doubt was: *I am.* Consciousness *is;* there *is* inner experience.

It's true for all of us. The one thing we know for certain is that each of us is an experiencing, conscious being. And yet, science has absolutely no way of dealing with that, the most obvious thing in life. Science can explain what's happening down inside atoms and what's happening at the edge of the universe, but it cannot explain consciousness. It's a paradox—without consciousness there would be no science, but science doesn't know what to do, at all, with consciousness.

Today things are just beginning to change. In the past few years, some scientists have begun to look at consciousness to try to explain it. There is a new scientific journal called *The Journal of Consciousness Studies.* There's been a whole series of conferences on the science of consciousness, and more are scheduled. However, I don't think they fully appreciate what they are really getting into. When science begins to understand consciousness, it will begin to understand *spiritus,* the nonmaterial aspect of life. When we fully understand the nature of consciousness, we will begin to understand what the spiritual traditions have been teaching all along. I believe that consciousness is the bridge from the world of matter to the world of spirit.

Science doesn't realize this yet, but as it begins to look at consciousness, I think it's going to find itself being forced to look at the question *What is God?* Most scientists think that they've gotten rid of any need for God whatsoever. Paul Davies talks about deep time, looking back through time to the origins of the universe; deep space, looking out to the edges of the universe; and deep structure, looking down in matter, through molecules, through atoms, down to the quarks and the photons, to the deepest level of structure that you can go to. Science has looked into deep space, deep time, deep structure and found absolutely no place for God and no need for God. The whole thing works perfectly well, so, *QED,* science has disproved any need for God.

Well, what spiritual teaching of any worth ever said God was out there in space and time, or embedded in matter? If you look at most teachings, God is something to do with consciousness, with inner experience, things that science has deliberately avoided looking at. I think when science begins to seriously expore consciousness, it will find itself opening up to a whole new under-standing of what we mean by God.

A New Paradigm

The idea of paradigm shifts, of how a scientific belief system changes, is familiar to most of us today. Probably the most famous example is the Copernican revolution, the shift from seeing the Earth at the center of the universe to realizing it is revolving around the sun. It's easy for us to laugh now at how stubbornly people then held on to their old views, but if you had been brought up with that worldview and the church told you it was so, you would not question it. Plus, you had only to look—the Earth is clearly still, and the sun and the stars clearly move through the sky.

The Copernican revolution was a shift that took about 150 years and involved quite a few different people, including Galileo, Kepler, and Isaac Newton. I think we are on the edge of another equally profound shift with regard to consciousness. The current scientific model says that space-time-matter-energy is the primary reality, and the scientists who are looking at consciousness are trying to explain it in terms of the physical world. Some are looking at quantum physics, others are looking at complexity theory, others are looking at brain chemistry. Everybody has his or her own idea of how consciousness arises. But maybe they are all on the wrong track. No one is questioning the fundamental assumption of the modern scientific worldview that matter is insentient, matter is not conscious.

What I'm exploring in my new book is turning the current paradigm around: Consciousness is primary. Consciousness is the basis of the Universe; space, time, and matter are secondary. And that's completely revolutionary. Most scientists won't hear about it at all. But then, you know, 500 years ago the Vatican wouldn't hear about the Earth moving.

When you take the worldview that consciousness is primary, normal physical science comes out exactly the same. Nothing changes, apart from a few little twists in quantum theory and relativity. But suddenly, spirituality comes totally alive in ways that fit right in with science.

Let me give you an example of one way in which I see consciousness is primary. Each of us is sitting here, perceiving this room. We're seeing, hearing, touching, smelling, and so forth. From elementary biology, we all know what happens when we "see" the room: light comes into the eye; hits the retina at the back of the eye; triggers electrical impulses which get transferred back to the brain where they are processed and analyzed; and somehow, a picture appears in our mind. It happens in a way that is completely mysterious. Science cannot explain it at all. The truth is, we're not actually seeing the world directly. We create this experience. Every second of our lives, we are actually creating our experience of the world. It seems so real, we fall into the trap of thinking we are seeing the reality directly. But we aren't. We are, each of us, creating our own personal experience of the world.

And this is the key, I think, to beginning to make the shift—to recognize there are actually two realities: There is the reality out there; and then there is the reality we experience. The great German philosopher, Immanuel Kant, saw this about

200 years ago. He said that what we experience is a phenomenon that arises in consciousness, and this is quite different from the thing itself. In the physical world there's no color, for example. There is light of a certain frequency which the brain interprets as color. We all see it, but it's not actually out there—it is something we have created.

Scientists today look at the brain as an information processor. I think the brain is actually a *reality generator.* Every second, every micro-second of our life, the brain is creating our experience of reality. Moreover, we base this reality on just a tiny part of what is out there. A dog hears much higher frequencies than we do, and also perceives smells that we never smell. So a dog's reality is, in a sense, far richer than ours, at least in terms of sound and smell. A dog lives in a different reality. Different species live in different realities, each of them creating their own experience.

Light and God

The two great paradigm shifts in science this century have been Einstein's Theory of Relativity and Quantum Theory. The conclusion of Special Relativity Theory is that any observation, any measurement of space and time, is not absolute. We think that space and time are fixed—the distance from here to that wall is 40 feet, and that's fixed. What Einstein showed is that somebody zipping through this room at half the speed of light would measure that distance at 35 feet. And that isn't an illusion—distance really is different at different speeds. Time is also different at different speeds. If someone could travel at the speed of light, space would contract to zero and time would stop completely. This is interesting, because if light travels at the speed of light, then, as far as light is concerned, there is no time and there is no space. We think space and time are real, but as far as light is concerned, space and time don't exist. What Einstein showed is that light is the absolute, not space and time. The speed of light never varies. However far or fast you go, light will always pass you at the speed of light.

Light is the absolute also in quantum physics. Quantum physics says that if you increase the energy of a system, it doesn't go up smoothly, but in jumps. A quantum is an amount, the jump. Each jump is exactly the same. Every single jump of energy is an exact number of quanta. Moreover, every photon of light is an identical quantum of action. Every interaction in the Universe above the atomic level is mediated by the exchange of quanta, by photons. So you can say the whole Universe is inter-connected by light.

Did I hear, somewhere,"God is light; in the beginning there was light; let there be light?" I also find it interesting how we use the word "light" for the life within us. We talk about the light of consciousness, the inner light, seeing the light, being illumined. It isn't dark inside. Just as everything in the physical world really comes back to light, everything in our experience is, in a sense, a manifestation of the light of consciousness. So, "God is light" starts having truth not just in terms of the physical world, but also in terms of our experience of reality. They become more and more fascinating, these parallels.

It is part of nearly all cultures that in the deepest states of consciousness, one realizes a sense of union. In Eastern philosophy, it's often said "Atman is Brahman." Brahman is the universal essence of everything. Atman is the essence of your own consciousness. So the essence of consciousness is the essence of all creation; is "God." Some yogis and very high saints talk about the whole universe being *me,* or the being *within me.* Perhaps they are people who, through deep meditation, through lots of inner work, exploration, clarifying their minds, have come to realize that it is all a creation of consciousness, that everything knowable is, in a sense, within them.

It's interesting that you can say the "F" word on television today, and you can use the "L" word, love, in business, but the word "God" is very taboo still. What science has done is to say we can take an idea and we can experiment with it and see what happens. The experiment which I would like to suggest—and it's one to play with—is to take the hypothesis that God is the essence of consciousness, and that consciousness is primary, and that the mystical statement "I am God" means that I am-ness is God-ness. Then say, "Supposing that is true, how do I live my life?"

I believe that when we really understand consciousness, and consciousness as the source of everything we know, we will begin to start forging that bridge across to God.

Waking Up in Time *is published by Origin Press, Inc. Novato, CA. 1998.*

An Invitation

The "Edge" training seminar held last August at Sequoia Seminar in Ben Lomond, California (*Timeline*, Sept/Oct 1998), was so successful that two more seminars are scheduled for this summer. These seminars are open to people who would like to experience the "Living on the Edge of Evolution" program or learn how to facilitate it for their own groups.

The program is based on addressing basic life questions: Who are we? Where have we come from? Where are we going? And what must we do to have meaningful survival? These questions are addressed in a new context, because for the first time, we can trace our ancestry back 15 billion years to the beginning—and see existence as a sacred, continuous, and unified whole.

With this knowledge, we have a new basis for answering these basic life questions. We have a new story. And from this new story, we have the foundation for the emergence of a new culture, an "integral" culture, which is based on an understanding of our role in the evolutionary process.

Living on the Edge of Evolution is a participative exploration of how, together, we can do this.

Living on the Edge of Evolution:
June 23 - 27, and August 4 - 8, 1999

The seminar starts with dinner on the first day (Wednesday) and ends before lunch on the last day (Sunday). Cost is $375 if

registration is received by May 1, $400 thereafter. This includes room, board, and materials. Please call or write Joe Kresse at the Foundation for further information or a registration form.

The Milky Way Galaxy in a Box of Salt

"There is a Native American saying that the first miracle is that anything exists, the second miracle is that life exists, and the third miracle is that we know that we know. The primary reason for doing this exercise is to consider what we now know about the Universe and to experience wonder, not only at the magnitude, but at the complexity, intelligence, and beauty of the mystery from which it arose.

Eileen Rinde

One of the most popular experiences in the Foundation's program "Living on the Edge of Evolution" is a presentation by Eileen Rinde demonstrating the vastness of our Milky Way Galaxy. Using the contents of a box of salt to simulate stars on a background of black velvet cloth, she tells the story of the birth and formation of the galaxy, pouring salt crystals to illustrate the narrative as she goes. In closing, she reveals that it would take 30,000 boxes of salt to portray accurately the number of stars in the Milky Way. We thought some of our readers might want to experiment with this way of conveying the awe-inspiring size and majesty of our galaxy home.

Eileen: Galaxies have three general shapes: spiral, spherical, and irregular. Spherical galaxies are large and very old, and many of them no longer produce new stars. Spiral galaxies are middle-aged and middle-sized. They still give birth to new stars. The youngest galaxies haven't spun themselves into spirals yet and have irregular shapes. Our galaxy, the Milky Way, is a middle-aged spiral and is still birthing stars.

There are 50 to 100 billion galaxies in the Universe. We thought that ours was the only one until, in the 1920s, modern telescopes began to reveal that the Universe we inhabit is vastly larger and more complex than we had known. Even the smallest galaxies contain 100 billion stars. Our Milky Way galaxy has 300 billion stars.

Gravitational forces cause galaxies to cluster in "local groups." There are about 30 galaxies in our local group, and ours is the second largest galaxy in the group. The only one larger than our Milky Way is Andromeda, a spiral-shaped galaxy. Our next-door neighbor, the Magellanic Cloud, an irregular-shaped galaxy, is the smallest.

The "local groups" of galaxies tend to join with other groups to form chains and ribbons called galaxy superclusters, separated by enormous voids in space.

How did the galaxies come to be? Their stories began 15 billion years ago. An infinitesimal, empty point in primordial space-time contained the potential for the entire Universe. There was nothing, yet there was something that gave rise to an event called the "singularity,"the first moment of our Universe.

It was smaller than one of these grains of salt, yet everything that now exists arose from that singularity. In one singular, primal instant, it exploded outward, creating matter, space, and time.

Until the 1920s, we did not know about this. Scientists thought that our galaxy (the only one they knew) had always hung, floating in existing space and that time had always existed and space had always existed. But the observation by Edwin Hubble that the Universe is expanding was to change all that.

As Hubble showed, each cluster of galaxies is moving away from its neighbors. For example, the Centaurus Galaxy cluster is 200 million light years from ours and is hurtling away so fast that every two seconds it increases its distance from us by the width of North America.

Because of the expansion, astronomers realized that the Universe can not have existed forever. A billion years ago,the galaxy clusters were closer together. A billion years before that they were closer still, and so on. By working backwards in this way, astronomers have been able to calculate that the Universe began about 15 billion years ago. They call the beginning the “Big Bang.”

Out of the singularity, the Big Bang, energy particles exploded at a fantastic rate. But as they began to slow down, they were able to coalesce into the two most elementary atoms, helium and hydrogen. As time went on, these atoms began to condense into clouds and they collided with each other. The heat at the center of the clouds built up until it sent waves of energy outward. Stars were born in that turmoil and intensity. Gravity acted to hold them in clusters, and galaxies were created.

At the center of the Milky Way Galaxy is a black hole—every galaxy has a black hole at its center, as far as we know. A black hole looks like nothingness, but in fact it is really matter so dense that it absorbs all light. The matter comes from ancient, primal stars that have collapsed and died.

The primal stars, called supernovas, formed additional elements in the heat of their interiors as they collapsed. We, ourselves, are made of the elements from the dust of stars: the calcium in our bones, the iron in our blood—100 elements were made in the stars. As physicist Timothy Ferris says, “When we look at subatomic particles, when we look at the stars and galaxies, we see evidence from every direction that the Universe is all of a piece and that it began as a single seed, smaller than an atom. And, in a very real sense, you and I were there. Every scrap of matter and energy in our blood and bones and in the synapses of our thoughts can trace its lineage back to the origin of the Universe.”

As the supernovas spewed out new elements, they created new stars. One of these stars is our Sun. Our Milky Way Galaxy was approximately 7 billion years old when the Sun was born. It is about two-thirds of the way out toward the edge of the galaxy, 30,000 light years from the center. It is a medium-size star, which we should be grateful about because if it were larger or smaller, it could not have spawned life. Out of the

debris of the super nova death that formed the Sun, nine planets were formed. Only one of those planets had the right conditions to evolve life—the right size and the right distance from the Sun.

We are well aware that our Earth is rotating. We experience it in the changes between day and night. We also experience the revolving of the Earth around the Sun via the yearly calendar and seasons. But we have no way to experience in our daily life that the Sun, with its contingent planets, is also revolving around the center of the galaxy at the rate of 220 miles per second. It travels once around the galaxy every 250 million years and has already completed the circuit 20 times. And the galaxy itself is revolving around the center of our local group of 30 galaxies; our local group is also revolving around its cluster of local groups.

These are just a few of the things that we have only recently learned from science. The knowledge that we do not live in a static, limited Universe, but a dynamic, expanding, and creative one is so new that we have scarcely taken it in. The fact that we can consider and ponder the meaning of what we know is perhaps the greatest miracle of the myriad of miracles that the Universe reveals to us.

Note: The Milky Way Galaxy is a spiral 100,000 light years across. It is 10 to 14 billion years old and contains 300 billion stars. There are approximately 10 million grains to represent stars in one box of salt. In order to accurately represent all the stars in the Milky Way, 30,000 boxes of salt would be needed.

We Are Lucky That Our Sun is the Right Size.

The Earth orbits a small, single star in the boondocks of our galaxy. More than half of the stars in our galaxy are double or even triple suns. What if our home world circled suns like these? As it moved near one sun and then another, temperatures would change catastrophically, probably rendering life impossible. What if we were a planet near the seething radiation at the center of the galaxy? Or what if our Sun varied in size and brightness, the way many stars do? Then life as we know it would probably never have started. If our Sun were much more massive than it is, it would burn its fuel more quickly. Instead of being stable for so many billions of years, allowing life to develop slowly, it would have burnt itself out in a cosmic flash in the pan.

—David Levy

Why is the Night Sky Dark?

With so many stars and other bright things in the Universe, why doesn't their light come charging in on us? Their combined radiation should make the sky as bright as the Sun. The conditions for darkness were set in the instant the Universe began with a titanic explosion. All the superclusters of galaxies are still expanding from that explosion. The darkness, it seems, is the result of the young age of our expanding Universe—still so young that light from its most distant objects hasn't even reached us yet.

—David Levy

David Levy quotes are from *Parade magazine.* Levy, author of 20 books, has discovered 21 comets.

Abolition: Daring to Hope for a World Without Nukes

An Editorial from the *Minneapolis Star Tribune*

Some of America's free-thinkers have been gathering lately, whipping themselves into an idealistic froth. These antiestablishment types consider themselves crusaders for world peace, and they're pushing an outlandish proposal. The Cold War is over, they say, and it was a foolish business in the first place. Now that the Berlin Wall is in bits and Russians are eating Big Macs, they insist it makes less sense than ever to keep a huge store of missiles. What they propose is close to unthinkable: It's time, they say, to abolish nuclear weapons.

And who are these dreamers? Jimmy Carter. Mikhail Gorbachev. Gen. George Lee Butler, former head of the U.S. Strategic Command. Robert McNamara, former defense secretary. Gen. Charles Horner, commander of the Allied Air Forces in the Gulf War. Paul Nitze, Ronald Reagan's top arms'control negotiator. Helmut Schmidt, former chancellor of Germany. Admiral Andrew Goodpaster, former supreme Allied commander of Europe.

It doesn't often happen that a boat is rocked by the crew that built it in the first place. And this illustrious group of traditionalists is rocking hard—daring to challenge assumptions that have governed the world for decades. They're questioning whether the doctrine of deterrence is really all it's cracked up to be. They're elucidating the absurdity of a philosophy that regards a threat of nuclear annihilation as the key to the world's safety.

It's an uphill battle to make such a case. The planet has been living with the bomb for a half-century now, and its people have come to believe they have no choice. But the leaders of this new movement insist that abolition has never been in closer reach.

This argument is enjoying much-needed amplification and analysis right now in Jonathan Schell's new book, *The Gift of Time.* Schell explores the thinking of the generals and politicians who conceived and waged the Cold War, and emerges with the conviction that shaking off the nuclear shroud has at last become a realistic goal. "History has handed us a political windfall," observes Schell. "Why do we refuse to spend it?"

Spending the windfall—getting rid of the weapons—will take great resolve and courage. It will require patience, ingenuity, surveillance, and international teamwork. But above all, it will require rethinking the conventional nuclear wisdom—including the deeply entrenched notion that disarmament is impossible. As Gen. Butler argues in Schell's book, "We need to reflect on how revolutionary ideas get implemented and become evolutionary ideas. The first and foremost test is whether, at its very core, the idea makes sense. And I believe that the idea of abolishing nuclear weapons passes that test with flying colors."

The idea makes even more sense when you consider the alternative. If the United States and its official nuclear fellows decide to hold on to their weapons, they'll have a hard time persuading countries like India and Pakistan to give up theirs. The nuclear club is getting less exclusive all the time. Each new entrant is buying into the same bankrupt theory that fueled the Cold War: that threatening to kill millions of people is the best survival strategy money can buy.

"That's barbaric," says Butler to Schell. "In fact, it is more barbaric than, perhaps, any measure for survival that you'll find in the animal kingdom. I have arrived at the conclusion that it is simply wrong, morally speaking, for any mortal to be invested with the authority to call into question the survival of the planet.

"Nuclear weapons are irrational devices," says Butler, and "the vast majority of people on the face of this earth will endorse the proposition that such weapons have no place among us. There is no security to be found in nuclear weapons. It's a fool's game."

So says an American general about a game he helped create. He wants to call it off, to make a nuclear exchange ultimately impossible. Really, what's so outlandish about that?

Ten Reasons to Abolish Nuclear Weapons

by David Krieger

David Krieger is president of the Nuclear Age Peace Foundation in Santa Barbara and a founder of Abolition 2000, a Global Network to eliminate Nuclear Weapons.

1. Existing Obligations

The nuclear weapons states have made solemn promises to the international community to negotiate in good faith to achieve nuclear disarmament. Each of the nuclear weapons states accepted this obligation when it signed the Non-Proliferation Treaty (NPT), and extended this promise at the 1995 NPT Review and Extension Conference. India and Pakistan, which are not signatories of the NPT, have committed themselves to abolish their nuclear arsenals if the other nuclear weapons states agree to do so. The only nuclear weapons state that has not made this promise is Israel, and surely it could be convinced to do so if the other nuclear weapons states agreed to the elimination of their nuclear arsenals. The International Court of Justice, the world's highest court, unanimously highlighted the obligation for nuclear disarmament in its 1996 Opinion: "There exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control." This means an obligation to reduce the world's nuclear arsenals to zero.

2. Nuclear Weapons Proliferation

The failure of the nuclear weapons states to act to eliminate their nuclear arsenals will likely result in the proliferation of nuclear weapons to other nations. If the nuclear weapons states continue to maintain the position that nuclear

weapons preserve their security, it is only reasonable that other nations with less powerful military forces will decide that their security should also be maintained by nuclear arsenals. Without substantial progress toward nuclear disarmament, the Non-Proliferation Treaty will be in jeopardy when the parties to the treaty meet for the NPT Review Conference in the year 2000.

3. Nuclear Terrorism

The breakup of the former Soviet Union has weakened the command and control system relied upon by the Russians. This could lead to nuclear weapons or weapons-grade materials falling into the hands of terrorists or criminals. Because terrorists and criminals are not easily locatable, they are not subject to deterrence, which relies upon the threat of retaliation. It isn't possible to retaliate against a party that is not locatable.

4. Nuclear Accidents

The breakup of the former Soviet Union has also weakened Russia's early warning system, since many parts of this system were located outside of Russia. This could result in the launching of nuclear weapons by accident or miscalculation, given the short time periods available in which to make decisions about whether or not a state is under attack.

5. Immorality of Threatening Mass Murder

It is highly immoral to base the security of a nation on the threat to murder hundreds of millions of people. This immoral policy is named nuclear deterrence, and it is relied upon by all nuclear weapons states. Nuclear deterrence is a dangerous theory that in implementation places humanity and most of creation in jeopardy of annihilation.

6. Undermining Democracy

Nuclear weapons undermine democracy by placing the power to destroy the world as we know it in the hands of a very few individuals. No one should have this much power. If these individuals make a mistake, everyone in the world will pay for it.

7. Secrecy from Public

Decisions about nuclear weapons have been made largely in secrecy with little involvement from the public. In the United States, for example, nuclear weapons policy is set forth in a Presidential Decision Directive, which is not made available to the public. On this most important of all issues facing humanity, there is no informed consent to presidential policy.

8. Drain on Resources

Nuclear weapons have drained resources, including scientific resources, from other more productive uses. A recent study by the Brookings Institution found that the United States alone had spent more than $5.5 trillion on nuclear weapons programs since the beginning of the Nuclear Age. The United States continues to spend some $25-$35 billion annually on maintaining, testing, and developing its nuclear arsenal. All of these misspent resources represent lost opportunities for improving the health,

education, and welfare of the people of the world.

9. Warnings by Distinguished Leaders

Distinguished leaders throughout the world, including generals, admirals, heads of state and government, scientists, and Nobel Peace Laureates, have warned of the dangers inherent in relying upon nuclear weapons for security. These warnings have not been heeded by the leaders of nuclear weapons states.

10. It Is Our Responsibility

We have a responsibility to our children and grandchildren to end the threat that nuclear weapons pose to humanity. If we do not accept responsibility to speak out and act for a world free of nuclear weapons, who will?

When the Economic Machine Sputters, Consider Replacing It

by Donella Meadows

There's a small upside to the big downside of the global financial implosion. We get to be amused by theories about why it is happening.

Scandals in Washington. Allen Greenspan. Panic about the turn of the millennium and the Y2K computer bug. The too-tight relationship between Japanese banks and the Japanese government. The Russian mafia, the launch of the Euro, the indisputable evidence of global climate change. I've heard these postulated causes and more from reputable business people.

What's striking is that the theories all point to causes outside the financial system. They don't challenge the model, now dominant everywhere, of capitalism as a nearly flawless machine, turning out ever-increasing wealth, requiring only that we act according to our self-interest. The machine is slightly finicky, the theories imply, subject to breakdown if we stop acting as economic theory requires us to—desiring ever more, working hard, choosing strong leaders, taking risks, being inventive, privatizing just about everything, competing vigorously but not cheating, and never losing confidence.

Given that model, when the machine slows down, we have to find some human failure to account for it. Human failure is easy enough to find, so we end up with a rich assortment of causes for any crash.

I suspect we all actually know better. The people who most frantically recite the dogma of the free market probably know best of all. The fault is not in some outside glitch. The fault is in the machine itself, which has a morbid sensitivity to glitches.

We have only to look at history to see that booms and busts are endemic to market systems. We have only to look at very recent history to see one reason why. Nothing in the real economy has

been getting more valuable at 30 to 40 percent per year. But financial securities have, round the world. The accounts of the small minority of people who own securities have swollen wonderfully, but those are just numbers on paper. Everyone knew that there was insufficient worth standing behind those numbers and that, when the music stopped, there would not be enough chairs for everyone to sit on something solid. Everyone knew, but no one dared say it, because saying it would make the music stop.

So now it has stopped. Numbers on paper are still coursing around the world, trying to find some real value to settle upon. Folks who do the actual work of the economy are getting hurt more than those who were sucked into the speculative frenzy of dreams and greed, but that's what always happens in capitalistic busts.

Peter Schwartz, a great strategic planner, formerly of Royal Dutch Shell, now of the Global Business Network, wrote a memo last year, putting forth three scenarios about where things might go. He calls them:

• **"Sand in the Gears."** Leadership fails to rise to the crisis. Reform measures are mainly cosmetic. Continued international economic and political friction. The whole world resembles Japan in the '90s, depressed for years. But the motor of growth does slowly revive.

• **"Breakdown."** A vicious circle of economic decline, political conflict, violence. Failure of leadership consumes most of the economic potential. The pattern resembles that of the early 20th century—booms, busts, devastating wars.

• **"Shocked into Higher Gear."** The crisis shocks people into high-speed creative destruction. Existing and new leaders act to accelerate innovation and restore confidence. Asia resumes rapid growth, increasing demand drives export and trade. The pattern resembles the extended growth of the 1950s and '60s.

I'm rooting for a fourth scenario, "Shocked into a New Economics," in which the creative destruction is directed at the obvious weaknesses of both socialism and capitalism.

The new economics would worship something far more satisfying than mere growth, especially since growth is ever more costly on this over-full planet. Actual human needs would be a fine focus. It would admit the novel idea of "enough." It would not have to whip up demand for stuff that no one needs (and the planet cannot afford) just to keep satisfying bets on growth placed by people who have too much money but think they should keep getting more. Ensuring "enough" for both the poor and the rich would take away the insecurity, desperation, envy, greed, and howling fear that drive the booms and busts of the market.

A new economics would still have a market, but it would put the market in its place, as the servant, not the master of society. It would reward work and investment, not speculation. It would keep its books straight, counting up environmental and family and community costs as well as money costs. It would find more truthful indicators of success

than the Gross Domestic Product, which is a measure of frantic activity, not of actual welfare. It would redefine "jobs" so that people can be supported for real social contributions—raising children, learning, teaching, caring, cleaning up, restoring the environment, making joy for others.

This new economics sounds nutty to those who are still mesmerized by the old economics, but it is alive and well thought through. (See anything written by economist Herman Daly, or check out the organization that he and others started, the Society of Ecological Economics, or the journal *Ecological Economics*.) It's available any time we want to try it. We just have to let go of our illusions about the clunky old machine that is failing us one more time, as it has before, and as it always will until we invent a better one.

Donella H. Meadows, a systems analyst, author, director of the Sustainability Institute, and adjunct professor of environmental studies at Dartmouth College, writes a syndicated article each week to "present a global view, a connected view, a long-term view, an environmental and compassionate view." Timeline *readers who feel that these articles deserve the widest possible distribution are encouraged to contact their local newspaper editor and suggest the paper carry them. Meadows can be reached at The Global Citizen, Box 58, Plainfield, NH 03781.*

Hafsat Abiola:
Profile of an Emerging Leader

Among the galaxy of leaders from around the world who gathered at the 1998 State of the World Forum, held October 27 to November 1 in San Francisco, were 55 young people participating in the Forum's Emerging Leaders Program.

Many of these Youth Fellows have grown up in the midst of war and repression, hatred and fear, in places like Bosnia, Northern Ireland, South Africa, and Nigeria. And yet, out of those crucibles of despair, they have emerged, phoenix-like, with a message of hope. One of them is Hafsat Abiola.

Abiola, a 24-year-old Harvard graduate, is the founder and director of the Kudirat Institute for Nigerian Democracy (KIND). Her father, Moshood Abiola, won the 1993 presidential election in Nigeria but was subsequently arrested by the country's military regime and placed in solitary confinement. He died in prison in July 1998 on the eve of his release and two years after his wife, Kudirat Abiola, was assassinated on the streets of Lagos while working for her husband's freedom and for the cause of democracy in Nigeria.

At the State of the World Forum, three months after her father's death, Hafsat Abiola participated in a panel with nine of her cohorts. The subject was "Young Emerging Leaders and Social Transformation." Some of her remarks:

On What Motivates Her

I'm inspired by all the beauty and expressions of life around me everywhere I go—in the sky, in the leaves, the way the wind blows, the way people's eyes connect with each other, the way mothers treat their daughters, the way

people are brought up, the way people laugh. I have been in a space, in my early childhood and even now, of great love, great nurturing, and great care. I know that no one will reflect that which he or she has not seen. So those children or adults who have seen a lot of pain, who have not been loved or cared for, who hunger for food, or shelter, or security, or attention, will not show the best of themselves. And that hurts because I want all of us to be able to show the best of ourselves. So that is my motivation.

On the Support of Adults

I want very much for adults to support me, my voice, my work, and other young people around the world. Yet I know that people are shaped by the context they grow up in. So, if they are not showing me the support I believe I need, then how do I restructure the relationship so that I will get that from them? I listen. I really listen. And if there is a way I can be healing for anybody I come in contact with, that makes all the difference. I won't wait for them to come and help me. Let me give to them first and see what happens.

On the Conflicts of Being a Leader

What I find with young people moving into leadership is that it's a problem of them not being honored, acknowledged, and respected for what they are able to achieve. Instead, if their achievement falls short of their intention, the criticisms just inundate. What does a person do under attack but close up? You just go inside and you become insular. You are no longer open because your spirit has been hurt. If you really know your spirit well, and you dream your dreams well, you know you will never achieve everything you want. So, what do you do? What do you do when the way it's measured is that you must achieve, and, especially, you must achieve by society's standards, not even by whatever standards you bring?

This kind of conflict is always, always, always on my mind. You know, I go around speaking to people, and my tours are measured by whether people sign on to a resolution, or a sanctions bill in support of democracy in Nigeria, or whatever. But sometimes I find that people are not in a space where they are going to do such things. So, do I immediately close up and not work with them? If what I have come to do is to share stories and love with them, then that is what I will do, and not measure. But you see, the people I work with are waiting for me to come back and say, "Well, this is what resulted." To instead come back and say, "Well, you should have seen all the connections—it was electrifying. And all the eyes I looked into." Why, they would be like, "Oh. Yeah. Right." There will be some level of discomfort about where I am, you know, and what I am doing.

My sense is that we have to revisit the way we come to public space, and to preserve time for our private space. I am often terrified of being destabilized when coming into public space. It troubles me because I want to give everything, but I want to know that I actually have what I am giving. Otherwise, I am an empty shell that can be filled with all sorts of things, that can be manipulated. So it's extremely dangerous. Yet, in a time of great urgency and challenge, do you have

time to create that private space and to know your being? This is what we all have to figure out.

I think that the elders and leaders of our world, when in public space, know that all eyes are on them and think they have to prove something. On one level, though, we just have to know that the only thing we need to prove something to is the spirit locked in our bodies. That is all. If anything goes wrong with the spirit, that is what must be healed. We need to redefine our time horizons, be willing to work with the pace that is set from within. It might not be as fast as outer society wants, but if that is what our spirit is telling us, then that is what we must do.

On Globalization and Leadership

I feel that, at least in Africa, we've long been part of a global community. It was several hundred years ago when the industrial revolution in Europe and the Americas took millions of people out of our continent into the international world. That for me is a global reality.

Then later, when they decided, no, we didn't understand enough, we didn't have any political intelligence for putting together political institutions and social institutions, we went through another period of colonization, where the civilized world of Europe wrestled to take over parts of our lands again, and denied our people voice. Again a global reality.

Now that we all in the world are finally coming to the realization that we are in a global community, perhaps it's an opportunity to begin to put together the kind of leadership that can address all people, including those who have not been heard for a very long time. Perhaps it's a time that we can start to demand from multinational corporations a global citizenship. Not just say to Shell Oil, "You are part of The Netherlands, you are part of England," but also, "You have operations in Nigeria. You are part of Nigeria. You are responsible to the people of Nigeria."

This is a great, great time for all of us, adults and youths, to begin to see how we will start on the path to create the kind of world where no one is excluded and everyone is upheld and honored.

Reported by Mike Abkin who represented the Foundation at the State of the World Forum's initiative, "Our Common Enterprise."

Editor's Note: As *Timeline* went to press, we learned that Hafsat Abiola had just been elected to the House of Representatives in Nigeria.

What the Tule House Has to Teach Us

Malcolm Margolin is a life-long student of California Native American traditions and culture. He is owner and publisher of Heyday Books, which specializes in California history, natural history, culture, and Native American life. His quarterly magazine, News from Native California, *is devoted to the history and cultures of California Indians. He co-founded Native California Network, a foundation for*

California Indian cultural affairs. A gifted story-teller who fascinates adult audiences with his tales of Native American lore, he is sometimes called upon to speak to more challenging audiences . . .

As a special favor to an old friend, I found myself in front of a group of fourth-graders one day describing a traditional tule house. I explained how the framework of willows was erected and how the tule was cut, aged, bundled, and tied onto the framework to form a water-tight covering. I tried to evoke the texture of the tule and its distinctive smell—earthy and musty, a bit like Lipton tea. I asked them to envision what it would be like to crawl through the doorway into the cool, dark interior of the dwelling, to touch the earthen floor packed hard, almost to a polish, and strewn with sleeping mats and rabbit-skin blankets. I tried to get them to picture what it would be like to sleep in one of these houses shoulder-to-shoulder with brothers and sisters, uncles and aunts, parents and grandparents; what it would be like to wake up on a cold winter morning to hear elders, who would have stayed awake all night to keep the fire lit, talking softly among themselves; or to look through the entrance on a bright spring morning to see the welcome sunshine.

"Now what do you think it would be like to live in a tule house?" I asked in my most ingratiating manner. A dozen hands shot up. I pointed to a little girl with dreamy eyes and a charming smile.

"Yucky!" she said, with unexpected clarity and force. "Why?" I asked, shocked and completely taken aback.

"I like having my own room. I like how big my house is. I don't want to live on a dirt floor with tule walls and sleep with my whole family!"

I was amazed and in truth delighted with the response—I realized that she had indeed been picturing life in a tule house. Her real, deeply felt answer, free of piety or politically correct platitudes, was a wonderful beginning for a discussion about tule houses. So without trying to "convert" her, I led the discussion along a different track. Here are some of the topics we considered:

What would it mean if all the materials for building a house were free and readily available to everyone?

It costs tens of thousands of dollars to buy the lumber, plumbing, wiring, tiles, and fixtures needed for a modern house. What if all the material you needed was growing all around you, free to anyone who wanted to gather it? The first thing that dawned on everyone was that under these conditions, there would be no homelessness. (I was surprised at how deeply concerned these youngsters were with the problem of homelessness.) We also discussed how, when you are an adult, you end up spending a quarter to a third of your waking hours earning enough for housing, not to mention the huge amount of time spent dusting, mopping, sweeping, painting, mowing the lawn, and fixing up. Living in tule houses might have its inconveniences, but it would free up a lot of time. "What would your parents do with the time?" we wondered. Would they, like Native people in traditional cultures, put more time into the arts, religion, ceremony, socializing, or even play?

We also touched upon the self-sufficiency of a society that has no need for the far-flung political and economic ties and massive transportation networks that ensure our access to housing materials, no need for our lumber and mining industries—tule and willow grow locally and in such abundance that they can be harvested without damaging the environment. Under such conditions, we would have a peculiar freedom—the freedom to develop our own languages, customs, beliefs, and ways of doing things.

What would it be like if all the houses in your village were made of the same material and were more or less the same size?

This question was loaded and we edged gingerly around it, because what it kept leading to was a discussion of class—of how our culture creates distinctions between people based on wealth, and it makes a difference whether you live in a mansion in the hills, a rented apartment, or in a trailer park. We discussed, at least circumspectly, the implications of living in a society where the differences between being poor and being wealthy are not so dramatic as in our own.

What would it be like to live in a society where houses were not a major form of wealth?

Owning a house in this culture gives people a huge piece of wealth, a way of providing for their old age, something to pass along to their children. What if you lived in a society where houses were not a form of wealth? How would your parents store wealth? In regalia? In baskets? Or would people redefine "wealth" more in terms of their relationships and connections to others?

Is privacy a good thing? Most of the youngsters either had their own room or shared one with only one sibling, and they liked it that way. In traditional times, it is true, there wasn't much privacy. Tule houses were used primarily for storing things and for sleeping. The rest of life—cooking, washing, entertaining, etc.—was carried on outdoors and in a more or less communal atmosphere. We considered the possibility that the privacy modern life affords us is a mixed blessing—does it bring an element of isolation, selfishness, and mistrust with it?

We discussed many other things as well, and in the end I asked the question again: "How many of you would like to give up your houses and live in an old-time tule house?" Still no takers. But we had accomplished something that afternoon—a recognition of the social and moral expenses of our way of life, and a recognition of the value of other peoples' choices. While no one in the class wanted to take up residence in a tule house, it was clear that at least some aspects of what it means to live in a tule house had taken up residence in us.

Reprinted with permission from Winds of Change, *Winter 1998.*

Blips on the Timeline

The term "blip" is often used to describe a point of light on a radar screen. Gathered with the assistance of Research Director Jackie Mathes, here are some recent blips which indicate positive changes toward a global community.

Peace Builders

When violent crime turned their quiet farm town into a frightening place seemingly overnight, the people of Salinas, California, began to act. One solution was to implement PeaceBuilders," a program initiated in 1992 in Tucson, Arizona, and now used in at least 500 schools nationwide. Guiding the program are four principles, recited weekly in the classrooms: praise people; give up put-downs; notice hurts and right wrongs; seek wise people when problems arise. PeaceBuilders creates the expectation of good behavior and constantly reinforces it with positive messages. Children write praise notes to teachers and to fellow students, and are encouraged to write them to parents. Some write peace treaties after they misbehave. Even Salinas police officers hand out PeaceBuilders citations to children they see acting commendably. In the first year, disciplinary problems fell 49 percent, serious violence fell 59 percent, absences, 31 percent, and vandalism, 61 percent. Salinas is not violence-free, but residents say that a culture of calm has now settled in.

Genetic Labels

Health ministers in Australia and New Zealand have decided that all genetically modified food sold in their countries must be labeled as such from May 1 this year. The countries' food producers are annoyed and argue against labeling even when the genetic modification doesn't affect food's taste, size, or nutritional value. They claim that the ruling will reduce their competitiveness in the international market. However, the European Union has already adopted similar rules, putting Europe and Australasia at odds with the U.S. on the issue. The U.S. argues that enforced labeling of modified foods creates unfair trade barriers.

Doing Good Advertising

Underground Advertising is a tiny San Francisco agency whose clients are mainly nonprofit groups and other service organizations. Underground's five-person office created its first do-gooder ad two years ago for a redwoods conservation group. Since then, Peter Walbridge and Chuck Cardillo, the agency's co-directors, have taken on only nonprofit clients and other organizations whose goals they approve of. Walbridge and Cardillo's salaries are about half as high as a few years ago when they mostly free-lanced for other agencies on large corporate accounts. But they say their work day is incomparably more pleasant. "Now, trying to sell shoes or sell booze seems really petty," said Lori Warren, director of strategic planning. "I used to have to rationalize what I was doing by saying 'it's moving the economy' or 'it's helping my client.' Now we don't have to rationalize it."

4charity.com

Scott Dunlap, a recent Stanford Business

School graduate, launched 4charity.com, an online shopping site last September. With every sale, the retailer donates up to 25 percent of the purchase price to a charity the buyer selects. Membership is free, and the buyers pay the same price for the merchandise as they do when buying from the retailer's own web site. True to the spirit of his mission, Dunlap isn't making a cent from the enterprise and he doesn't plan to. The enterprise is staffed entirely by volunteers, and has no adverstising budget. Dunlap takes 2 percent of donations to cover costs and the rest goes directly to charities. 4charity.com started as a student project to raise money for the Special Olympics. After graduating last June, Dunlap enlisted the aid of a lawyer, an engineer, and several others. "This is a win-win idea," said volunteer Carl Anderson.

Suggestions Invited

We are always on the lookout for interesting subjects for Blips on the Timeline*. Readers are invited to send articles or clippings indicating positive change to Jackie Mathes at the Foundation.*

If we use your suggestion, we'll automatically extend your subscription for a year.

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Editorial Board: Jim Burch, Adelgund Heinemann, Joe Kresse, Jackie Mathes
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Desktop Publishing: Diane Gordon
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