

Skills for the Age of Sustainability: An Unprecedented Time of Opportunity

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Tachi Kiuchi's Tokyo newsletter, *The Bridge*
May 2002

It is an honor for me to be asked to address young people at the beginning of your careers while also at the beginning of a new millennium. Your generation has been named the Millennials, and this is a very important time in your lives, when you will make crucial decisions. It is also, without doubt, an extremely important time in human history -- a time, in fact, when you will necessarily change history forever.

If we are to talk about sustainability, we must, first of all, really understand that *unsustainability means CANNOT AND WILL NOT SURVIVE AS IS*. In other words, we have no choice but to change the way we live as a human species. You will either be a contributing part of our change for the better, or, if you choose to ignore or deny the fact of our present unsustainability, you will, by default, contribute to the rapid decline of our civilization and all humanity. Naturally, I hope you will all choose the first course.

When you look at your society now, this may seem a difficult and hopeless time, with unemployment at a new high and unsustainability in the very air you breathe. But if you learn to look at the present from a broader evolutionary perspective, you will see the potential for a very different future. In fact, the present is really an unprecedented time of opportunity. Think of it as a stage between caterpillar and butterfly -- a time of metamorphosis when an old unsustainable system fights to preserve itself as a new system struggles to be born.

Caterpillars chew their way through ecosystems leaving a path of destruction as they get fatter and fatter. When they finally fall asleep and a chrysalis forms around them, tiny new imaginal cells, as biologists call them, begin to take form within their bodies. The caterpillar's immune system fights these new cells as though they were foreign intruders, and only when they crop up in greater numbers and link themselves together are they strong enough to survive. Then the caterpillar's immune system fails and its body dissolves into a nutritive soup which the new cells recycle into their developing butterfly.

The caterpillar is a necessary stage but becomes unsustainable once its job is done. There is no point in being angry with it and there is no need to worry about defeating it. The task is to focus on building the butterfly, the success of which depends on powerful positive and creative efforts in all aspects of society and alliances built among those engaged in them.

If you look at unemployment figures with dismay, worrying about your future, you are not yet an imaginal cell. In my own life as a pioneering imaginal cell, I discovered early that the "business as usual" old system was not going to hire me or support my work. Why should it? My work is to replace it with a different way of doing things. All of my friends and colleagues now are imaginal cells. We have had to be very creative in making our living,

generating our own resources and discovering new ones. I will not say it has been easy, but it has carried the enormous rewards of new adventure and pioneering a better future. I can say with assurance that it is easier now than it was half a century ago -- *much easier*, because there are so many of us now.

If you use this butterfly metaphor in thinking of our transformation from unsustainability to sustainability, you will immediately see four sets of critical skills required to realize this great opportunity for co-creating a better world:

1. the skills of thinking and seeing systemically or holistically
2. the skills of creating a positive vision of the future
3. the skills of finding like-minded people for cooperative efforts
4. the skills of using available resources in new ways

You will have to be adventurous and creative to learn them, because you will not find them in the traditional university curriculum. I believe choices about institutionalized higher education should be made on the basis of specific needs for reaching specific goals. If you want to be an imaginal cell as a doctor or lawyer, for example, you will need to get those credentials. But this will not be an adequate education for sustainability, so know that your efforts to learn must go far beyond university education.

Let's look at these skills one by one.

1. Thinking and seeing systemically or holistically

This set of skills is absolutely essential to making strategic decisions about how to contribute to sustainability with your life, or even how to generate positive visions of humanity's future.

In the January issue of *The Bridge*, I cited scientific, religious and cultural worldviews, economics, governance, technology and youth as critical factors in human evolution to sustainable global community. Do you see what I mean by a holistic view? Sustainability is not just an "environmental" matter; it is a matter of changing the whole way we understand ourselves, the way we think about and behave towards ourselves and each other, the way we produce and distribute goods and services. It demands a holistic approach.

Tachi Kiuchi and Bill Shireman, to write their important new book *What We Learned in the Rainforest: Business Lessons from Nature*, [1, 2, 3, 4] had to visit and study in detail the entire ecosystems of rainforests in different parts of the world, including their four billions of years of evolution, in order to understand their economics well enough to translate them for the human business world. Thus they not only needed the biological, ecological and systems thinking skills required to understand rainforests, but they also needed the skills to understand the business world -- how corporations function, how they fit into larger economic patterns, why and how they need to change

-- *and* they needed the skills to relate and translate effectively between natural and human-created business systems. Because they had *all* these skills, they could reach their conclusion:

Take any problem . . . in business, and one thing is certain: nature faced it, and probably overcame it, millions or billions of years ago. Because of this, there is no better business model than the rainforest.

I would add to this, there is no better governmental model or educational model or even spiritual/ethical model than the rainforest or any other mature, healthy ecosystem in which every species is fully employed, all work cooperatively while recycling all of their resources, and all products and services are distributed in such a way that every species remains healthy. *That* is sustainability.

At present, for example, we not only pollute and destroy our vital ecosystems, including the air we breathe and the water we drink, but we also let 25,000 children die of hunger and easily preventable disease *every single day* (that is, 175,000 a week; over 9 million every year) without even considering this important information! We do not bother to think of the many millions of people of all ages who are destitute refugees. Our media makes visible only selected incidents of attention-getting violence while the deeper and more destructive currents of violence go unheeded. This should make it clear not only that our cultures are ecologically unsustainable in the long run, but that they are truly dysfunctional on an ongoing basis.

Imagine aliens on another planet observing humanity and asking themselves whether we are an intelligent species. What conclusion would they come to seeing how we behave towards each other and other species on which we depend for our own living?

Many studies have shown that the amount of money required to give all humans clean water and educational opportunities is a tiny fraction of our military budgets. The UN has reported for years that there is enough food grown in the world now to feed all people an adequate diet. This means that genetic engineering of crops, for example, is totally unnecessary and not a solution to world hunger any more than was the much touted Green Revolution which promoted the sale of fertilization and pest/weed control chemicals while creating deserts in the name of making gardens, as the World Bank admitted over a decade ago.

This should begin to make it clear that if we want to create sustainability and thrival, we must evolve our entire present human systems -- our patterns of beliefs, values and behavior as a species. We must look at the sustainability of the economic and governing systems that determine our impact on the planet and each other, as well as the scientific and spiritual concepts which form *their* context and rationale.

Evolution, from my perspective as a holistic evolution biologist, only occurs as a response to pressure or full-blown crisis. Your good fortune is to be born into a time of crisis, a time calling for dramatic change from one phase of human evolution to the next -- a time in which we must shift out of a ten-thousand-year history of fierce competition in which some get rich as most get poor to a new phase in which humanity

becomes a cooperative family within the larger family of all species.

Fortunately, other species have made this shift from competition to cooperation (or from antagonistic conflict to healthy non-antagonistic patterns of conflict and conflict resolution) as I have shown in my book, *EarthDance: Living Systems in Evolution*. So we have precedents in nature from which to learn, to find clues for our own healthy evolution into a better future, to see that this is a time not merely to work on survival, but on thrival for all people and other species.

Next month I will continue with the three other sets of skills. I hope you will be with me then.

2. The skills of creating a positive vision of the future

Though I am an evolution biologist, my holistic context is the whole universe. An important part of my work is devoted to ending the historical rift between scientific and spiritual conceptualizations of ourselves as humans within our universe. Along with many colleagues, I now see this as entirely possible, and ever more thrilling to work on, because it is resulting in an elegantly unified field theory within a meaningful conscious universe. Values are restored to science, evolution is seen to be an intelligent process, and hope for our enlightened and joyful sustainable future grows strong. Nothing has given me a sounder basis for believing in such a future or greater inspiration in working on it than this cosmovision.

A cosmovision is bigger than a worldview, as worlds exist within the greater cosmos. The Greek word kosmos means not only cosmos, but order (pattern in the scheme of things) and also, people. When Greeks speak of cosmos, they automatically have an integrated vision of people within the design of the universe. This was reflected in early Greek drama where individual human actions affected the greater realms of their society, the society of their gods and both humans and gods were subject to universal laws or cosmic order.

Many other ancient traditions also saw the cosmos in such layers of interaction, with the same patterns played out at different levels from human to divine, as exemplified by the ancient dictum, As above, so below. In our own terms today, we could call it seeing fractally, or understanding holarchy.

Holarchy was philosopher/novelist Arthur Koestler's way of showing embeddedness in nature. Examples of holarchy are cells, organs, organisms, species, ecosystems, planets, etc. or individuals, families, communities, ecosystems, nations, world.

Long ago, when I protested standardized intelligence tests as ways of labeling children, I searched for my own definition of intelligence. Greek drama and holarchy seemed to me important clues. The more layers of holarchy a person becomes aware of, understands their influence on and takes into account in their decisions and actions, the more intelligent they are.

With this definition, creating an intelligent positive vision of the future requires that we

take into account all holarchic levels and the interactions among them. Consider, for example, what a business in which you would like to be working in a sustainable future would look like holarchically. Imagine it in its holarchy: the business (infrastructure, management and employees) embedded within the community of its investors, suppliers and markets, those embedded in turn within its larger human communities, which exist within ecosystems, planet and cosmos.

In your vision, how is this business accountable to all these levels? -- in other words, how does it balance its service among profits, people and planet (the triple bottom line)? What does it provide of real use to humanity and how does it avoid doing harm? How are its values consistent with the human values of its stakeholders? This example will help you develop not only your skill in creating positive visions of a sustainable future, but will help you see what steps need to be taken to achieving them.

Another powerful model I use along with holarchy to understand biological evolution and envision our human evolutionary trajectory to a sustainable future is a cycle of evolution in which juvenile species are highly competitive and aggressive in seizing territory and resources while mature species have learned to cooperate with their competitors and evolve mutual support and recycling ecosystems.

This is why studying mature ecosystems such as rainforests and prairies can help us create working models of our own future. Note that mature, healthy living systems show enormous diversity (there are no monocultures in nature), create full employment of all members, distributed leadership governance, equitable distribution of goods and services and 100% recycling.

3. The skills of finding like-minded people for cooperative efforts

One of my own skills in practicing a holistic approach to teaching living systems is to speak to very different audiences, adapting each lecture to what I have learned about the particular audience's worldview, their understanding of "How Things Are." Thus I move between corporate, academic, religious, scientific, ecological and governmental venues in many parts of the world, as well as speaking to many groups of people from diverse backgrounds and occupations brought together by their interests in creating a better world. From this I have gained considerable understanding of why we need to integrate all these different perspectives. It has also given me a diverse and mutually supportive base of friends and colleagues around the world.

Paul Ray, a pollster whose surveys of American and European values led to his book *The Cultural Creatives* -- a wonderful resource for understanding the people hard at work creating a better future -- has a new book coming out soon called *The New Political Compass*. In it he reveals a dramatic shift in the US political spectrum of voters to a new category, neither left nor right, that he calls the New Progressives. At 36% to 45% of US adults "this emerging political stance is the largest segment of the polity, and they're basically unrepresented by politicians." Ray defines them as follows: "A new progressive . . . is far out in front on the issues, values planetary rather than nationalistic interests, ecological sustainability rather than sentimental environmentalism, feminism rather than heroic models, personal growth more than

personal ambition, and condemns globalizing mega-corporations more than the religious right."

This shows us very significant growth in understanding human needs holistically. If politicians with platforms reflecting the New Progressives' views on issues were only *available* for election, they could win easily, as demonstrated by US Congressman Dennis Kucinich in a landslide victory. I suspect the same pattern of values and priorities is developing in an equally significant portion of Japanese voters, waiting to be tapped by politicians who can represent them.

My point is that the numbers of like-minded people who want a sustainable future and are willing to work on it are growing very rapidly. In the US and Europe they are found in peace movements, ecology organizations, Zen, Aikido, QiGong and Yoga training centers, Health Food stores and organic growers associations, New religions such as Unity and Religious Science, new politics and alternative lifestyle groups, and many less obvious places.

As an example, I have just returned from a week of giving lectures to yoga teachers in training, gathered from all over the world at a Sivananda Ashram in the Bahamas. At the same time that they were hearing from western scientists, they were learning and practicing the ancient Vedic science of yoga, which means *union*.

One physician there lectured on the difference between yoga and the physical culture of western science, pointing out that western science teaches us only the physical aspect of the body while yoga teaches the more complete body system including its energy and spirit aspects. This more complete system was also taught in other ancient sciences, including the Japanese Kototama. It leads to an entirely different conception and practice of the healing arts which emphasizes self-healing rather than the lucrative interventions of western medicine which actively discourage the often more effective as well as inexpensive self-healing. Every yoga teacher trained in these ashrams -- thousands per year -- opens a new yoga center and teaches their values and practices for a deeply spiritual and healthy sustainable future to many more people.

There are as many ways to build our sustainable future as there are people to do it. My advice is to work on some aspect of it that lets your unique interests and talents combine, that you truly enjoy, letting your passion for it overcome all negativity and letting your enthusiasm attract others to work with you. Foster conversations and build alliances with people doing different but related work until your networks grow strong. The Internet is a fabulous place for locating like-minded pioneers in your own area and all over the world. Network, network, network!

4. The skills of using available resources in new ways

Our recent modern and post-modern technological ages, as well as our present information technology age, have been rooted in the assumption that ever more evolved technology will bring ever more benefits and therefore a better and happier future for all. But once we see holistically, we also see that technology alone cannot guarantee our well-being. It cannot even guarantee the sustainability of technological

production itself. Rather, we must see in nature *why* our present technology is unsustainable and learn a better way from it.

Human technology has always been inspired by nature. We have imitated spiders spinning and weaving, termites building multi-level mud dwellings, moles and badgers burrowing, cetaceans diving, clams making superglue, birds flying, bats echo locating, brains calculating, and so on in our technologies. A whole chapter of my book *EarthDance: Living Systems in Evolution* describes this.

Now a whole new wave of nanotechnology is inspired by observing the natural nanoworld (see an animated illustration of a bacterial motor, for example, at <http://www.arn.org/docs/mm/vidgraphics.htm>). Over the past decade we discovered that 95% of bacteria live in complex cities with amazing infrastructures never before seen: skyscrapers, canals, bridges, etc. *Scientific American* magazine in January 2001 described some 30,000 recycling centers per individual nucleated cell in our bodies. Multiply that by 100 trillion cells and you will see how serious your own body is about recycling the proteins of which you are made to keep you healthy!

The nanoworld has an evolutionary history billions of years longer than the macroworld we see with our naked eyes. Only now do we have the instruments to see how nature produces the most amazing materials we know. The big news, as revealed by Janine Benyus in *Biomimicry* is that while we forcibly "heat, beat and treat" *hydrocarbons* to manufacture our products with 96% waste in the process and much pollution, nature makes her fabulous materials, such as spider silks and mother of pearl, out of *carbohydrates* at ambient temperatures with no waste at all!

Nature's manufacture is, then, far more sophisticated than our own, and it is high time we accorded it due respect and learned its ways. In the March issue of this newsletter, my column was entitled *What's Wrong with Environmental Education*. It's main point was that we must learn to see ourselves as a vital part of nature, rather than as a species apart from the rest that sees nature merely as a vast resource for its own use. Once we see ourselves *within* Nature's awesomely complex living systems, as a newcomer species with a great deal less maturity and sophistication than countless other species coming before us, we will make rapid progress in maturing to cooperative sustainability as a human species. Then, having solved basics in living, we will also be freer to explore and develop our uniquely reflective human minds.

This is why I recommend to you Millennials, who hold the future in your capable hands, that you begin your careers by opening yourselves with due humility to the teachings of nature's living systems. Learn the skills of thinking and seeing systemically and holistically and of using available resources in new ways; learn to create positive visions of the future and find like-minded people for cooperative efforts.

Once these skills are in place, there will be no stopping you! Just start right now to think in evolutionary terms by asking yourselves what you would like to have your great-grandchildren tell proudly about *your* role in creating *their* sustainable present.