



Michael Charles Tobias
Jane Gray Morrison

Why Life Matters

Fifty Ecosystems
of the Heart and Mind

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Dedicated To Our Loved Ones

Introduction

Echoes and Appeals from the Heart & Mind

This collection of essays represents 3 years of articles published largely in our Forbes “Green Conversations” blog series with a few additional pieces from the on-line Eco News Network. While some of the data, circumstances and situations may have changed to varying degrees (for example, some 228,000 people have been added to the planet every single day since these essays were written, a continuing trend), the core spirit and essence of these diverse ecological, natural sciences, humanities and arts essays and discussions remain true to their original purpose.

Our hope is to intimate and spell out representative concepts and details that collectively enshrine the state of the world, primarily from an ecological set of perspectives. We hope to make clear how thrilling, remarkable and critical this generation is to the goal of stabilizing a planet that is, in far too many respects, under siege. Our goal is quite forthright: To underscore a very basic realization, namely, that the biological splendors of this Earth are precious, and have been, in many instances, ignored, misjudged, inappropriately exploited, or worse, for far too long.

“Sustainability” has become a universal appeal, from Wall Street to the Rio+20 United Nations Summit; from Ecuador to the United States; from across Asia and Africa to Europe; from Syria to New Zealand. Everywhere, the challenges of nurturing a healthy planet confront all of humanity, and hence, the enormous geographical breadth presented herein.

Moreover, the myriad of scientists, educators, key government and agency representatives and activists all speak to the great promise, but also the peril that now confronts the human species, and those tens of millions of other species with whom we co habit this miraculous planet. The science, ethics and artistic expressions of the urgency of our times could not be clearer. Every individual with whom we have had conversations, as re-published in this collection, speaks eloquently and passionately to many of the most pressing issues of our time, and we feel strongly that there is no better overview of this unanimous summons than the very basic statement, “Why Life Matters.”

The Challenges to Our Humanity

Our very humanity is confronted by fundamental questions and necessities, as ecosystems increasingly reveal enormous gaps, and human-induced change. The moral compass every individual chooses to live by; our consumer habits, fertility trends, levels of tolerance in an age of great biocultural diversity all go to the Chinese aphorism suggesting that this is, indeed, an interesting time in which to live. Interesting, but challenging. The inequality gap is before us, with fewer than 90 individuals laying claim to some 50% of the global economy.

Part One of this book examines some of the most salient opportunities before the global commons in the form of human economics and how economics is, as California Governor Jerry Brown once made abundantly clear, a sub-set of the needs of nature, not the reverse. We examine bio-economics with the goal of suggesting how socially conscious investing, impact investing and the future of business ethics hinges upon firm incorporation into the crucial sub-stratum of natural capital; and why consideration of the ecological bottom-line in any corporate standard operating procedures is now fundamental to the sustainable auguries and durability of any business.

Part Two continues in the economic vein with an emphasis on climate change, energy use, and some of the mechanisms that might best enable one society after another to customize their cultural norms in ways that are less infictive on the most vulnerable people and ecosystems. This is an interdependent world, and most pollutants do not recognize political borders any more than migratory birds or watersheds do. In the case of Ecuador, significant changes have occurred—from the time these essays and conversations were first published—that further challenge an ideal set forth by that country in an effort to reduce its exploitation of natural resources. But the future is yet to be written in terms of Ecuador's biologically stellar Yasuni National Park and the world's ongoing prayers for her unwavering stewardship.

Part Three considers human health, and the health of the environment as clear co-dependents. A healthy planet makes for a healthy person, and vice versa. With an emphasis on the food we eat and where that food comes from, Dr. Neal Barnard conveys a lucid and up-to-date account of some of the most pervasive issues in human consumption around the dinner table. Medical currents are also examined in terms of pharmaceutical companies and the latest challenges and successes within the realm of integrative oncology.

Part Four focuses explicitly on human demography and what the ongoing trends indicate from region to region. The unambiguous causes and effects of human population pressure on biodiversity are echoed from the U.S. to parts of Africa and Asia. Our unrelenting growth paradigm is examined with an eye towards its equally relentless pressure upon every single biome on the planet. Calls for human rights coincide with an emphasis on the pressing need to do away with the nutritional segregation that has meant the marginalizing of women and their children, particularly

young girls, in many parts of the world. Without equal rights and full access to contraceptive choices, the population explosion is likely to continue. While demographers debate the tipping and tapering points, there is no question that we remain “in the throes of” an unsustainable number of human consumers worldwide. Those interviewed in this section offer us a way out of what too easily resembles, at times, an intractable labyrinth.

Part Five is dedicated to individuals who are making profound differences for humans and other species, from Cambodia to India; from South Africa to nearly every country on Earth where the United Nations is engaged. We call such individuals “Ecological Heroes” because they really are. Against often unbelievable odds, their courage and tenacity should give each one of us not merely hope, but pragmatic options for the short- and long-term viability of a measurably higher quality of life for all sentient beings.

Part Six is representative of the complex challenges confronting such heroes, from China and Japan to England and all those countries where there are at-risk species. From England’s National Trust, to the Alliance for Zero Extinctions, to China’s new embrace of what its leadership has called “ecological civilization,” the trends have been made manifest in country after country: we must embrace new paradigms that can better fashion a workable union between human cultures and all other life forms.

In **Part Seven** some of those “life forms” are analyzed in specific reference to what is generally thought of as the cause of *animal rights*. This phrase encompasses animal protection, animal welfare and animal liberation. It harkens back to many of the world’s greatest spiritual traditions, and asks that we re-examine our often supremacist notions of a self-important human species and come to a much broader sensitivity with respect to other feeling, thinking, vulnerable beings whose lives are not merely biological, but also biographical.

Part Eight considers some of the critical solutions to ecological illiteracy, and to the melding of human culture with conservationist appeals. How does one create a national park in a country like Haiti, where human poverty, and corresponding deforestation, is rampant? How can we engender an emphasis on tolerance and compassion in our school curricula? What buy-ins by countless communities, often in economically marginalized parts of the world, can be facilitated in win/win conservation models? An in-depth discussion with one of the world’s foremost primatologists, Dr. Russell Mittermeier, President of Conservation International, as well as with the former Executive Director of the United Nations Convention on Biological Diversity, Dr. Ahmed Djoghlaif, offer critical blueprints for what can be done, and what it will take to succeed in halting the loss of precious biodiversity.

Part Nine concludes with a diverse set of profiles of elegant personages and their examples of deep and personal commitment to nature. Through their philanthropy, their art, and their belief in ecological and social reform, these environmental luminaries demonstrate unconditional commitments to the natural world, and by their example proffer a love of nature that is truly inspirational and galvanizing.

The Sum of Its Parts

We recognize that no single anthology can do more than serve as a window on the expression of any number of ambassadors for an equal number of causes. What brings this collection of pieces into a singular focus is the lens of nature. We have found a clear unified vision shared by all those with whom we have had the good fortune to dialogue. Their own trials, tribulations and successes are indeed critical signposts along the way towards engendering a universal harmony that spells peace in every language.

We are grateful to everyone who so generously shared in the making of this modest collection of essays and conversations. Their time is precious, and we respect that far beyond the words and images on these pages. We also note that these essays obviously are mere “snippets” of vastly broader realms of knowledge, experience and expertise. But we hope that the sum of its parts, the quintessence of so many deep thinkers, great activists, generous souls and brilliant visionaries is lodged firmly in this book, and that its wonderful diversity will give readers everywhere a time-out in which to re-evaluate the possibilities before us in the twenty-first century as humble members of a vast biological collective.

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Part I
Nature and Human Economics

Chapter 1

Technology, Business and Nature: An Economic Primer on Winners and Losers

What is the true value to the world of a vulnerable cheetah? Nobody knows. Is there a way to determine it? What cost/benefits analysis could possibly be applied in order to discern so esoteric and critical a determination? This sums up the ecological crisis we're in. Is there a way out? (Fig. 1.1)

Last week, the Tesla stock hit 106.44 before dropping slightly, a record for what is surely among the most elegant environmental works of technology and art fused into one; while today's cover story of the Los Angeles Times by automotive and real estate editor Brian Thevenot features an overview of the new world of price competition between a variety of zero-emission vehicles, with "rock-bottom" leasing deals available.

There is a fascinating back-story to electric cars, supply-side economics, fair trade regarding eco-labels, carbon footprint calculators, eco-foot and eco-hand-prints, consumer willingness to pay factors (WTP), "integrated assessment tools" for determining levels of sustainability, and so forth.

For over a century these various indicators—from accounting to discounting—have been applied to both ecological ethics and economics, with a widely growing proliferation of science-driven variables upon which the fate of the world, as well as GNP, or Gross National Happiness, hangs, in addition to the sheer dispositions—however myriad—of consumers and collectives, whether in Los Angeles or in Bhutan.

Some of the very best peer-reviewed data can be gleaned from Ecological Economics: The Transdisciplinary Journal of the International Society for Ecological Economics (ISEE). In a critical essay published over 5 years ago, authors Stefanie Engel, Stefano Pagiola and Sven Wunder pointed out that there is no "silver bullet that can be used to address any environmental problem," especially when thinking about what consumers will actually pay for nature's often obfuscated services, or PES—"payments for environmental services" [1].

In fact, the fluctuations throughout the world are aggravated, in terms of any constancy, by the sheer proliferation of bio-cultural perceptions, "government-financed" subsidies versus payments into a pool or commune by economically marginalized farmers, the vast array of ecosystems involved, and who constitute true

Fig. 1.1 Namibian Cheetah.
(Photo Credit:
© M. C. Tobias)



beneficiaries of both the payments and the services and types, or quality of services, rendered.

Are those services urban or rural? Connected to a grid, or off the grid? Directly, or indirectly correlated with an ecosystem—for example, a field of hemp, or a genetically differentiated field of medical marijuana? Which taxes are more likely to benefit the greater good? What comprises that “good”—organic or inorganic systems? People or other species? Who decides, and how fair is the influence or sets of influence (special stakeholders) that determine the markets, the outcomes, the suasion which dictates true bottom-line assessments? How do biological coefficients even get measured when alleged human need and/or superiority is the governing metaphor? These, and countless other questions are at the core—both ethically and metrically—of ecological economics. What is at stake affects every one of us; all sentient beings.

For 15 years, the so-called Environmental Kuznets Curves have applied a variety of income inequalities to policy formulations that, among other variables, include market forces which exploit relatively inexpensive rural labor whose fruits and benefits enter the urban market places where costs are higher, and the ratio of costs to benefits are widely different than those in the rural sector where products typically originate. This type of calculation adds human rights, social justice and environment equality, not to mention gender equality, to the mix.

The global catch-all phrase of “sustainable development” has been all but demolished in neo-tropical environments, and most fisheries where “no-kill” zones are outnumbered greatly by the expansion of polluted “death zones”; indeed, where the very concept (as first envisioned under the famed Brundtland Report—“Our Common Future”) becomes ever more doubtful. At best, there are ecological compromises in the marine and riparian, fresh-water areas of the planet, as in the tropics, certainly the primary tropics. On marginal lands that have already been burnt or mowed over to varying degrees, eco-restoration at certain levels is the best that can be aspired to, particularly in habitats of huge vulnerability, meaning aggregates of at risk species, of whatever kind and proportion.

As early as June 2002, Stephen C. Farber, Robert Costanza (one of the world’s longest-standing luminaries in the field of ecological economics) and Matthew A. Wilson, published their seminal “Economic and ecological concepts for valuing ecosystem services,” and in their summary pointed out with devastating clarity that “While win-win opportunities for human activities within the environment may exist, they also appear to be increasingly scarce in a ‘full’ global ecological-economic system” [2].

In April 2010, Richard Norgaard published a ground-breaking essay, “Ecosystem services: From eye-opening metaphor to complexity blinder.” In it he analyzed the fact that, in so many words, there is not just one human nature; not one environment; not one correlation, but a dizzying proliferation of computational, or non-computational variations across the planet. He writes, “The metaphor of nature as a stock that provides a flow of services is insufficient for the difficulties we are in or the task ahead. Indeed, combined with the mistaken presumption that we can analyze a global problem within a partial equilibrium economic framework and reach a new economy project-by-project without major institutional change, the simplicity of the stock-flow framework blinds us to the complexity of the human predicament” [3].

These, and other issues of equal weight, relevancy and crucial significance to the fate of the Earth—who will win, who will lose; what ecosystems are more prone to be destroyed or saved; what is the value of a peanut, or organic avocado, versus the real cost to the world of such—will be examined in so many guises, at two upcoming global conferences this month. Next week at the University of Vermont in Burlington will see the convening of the Seventh Biennial Conference of the U.S. Society For Ecological Economics, and later in the month at the Flemish city of Lille, France, the European Society for Ecological Economics will hold an equally important gathering.

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Chapter 2

Women, Wall Street and Mitigating Climate Change: The Critical Importance of WOCAN

Michael Tobias (MT): Jeannette, the organization you founded, WOCAN—Women Organizing for Change in Agriculture & Natural Resource Management [1]—recently announced the “World’s First Women’s Carbon Standard” [2] which, according to your media release, “ guides carbon project developers in identifying and measuring the social and economic benefits of building women’s empowerment and gender equality into their projects.” I assume this emphasis upon women in the crucial sectors of agriculture and natural resource management stems from the reality of a gender differentiation, wherein the critical role of women has been vastly underestimated and undervalued?

Jeannette Gurung (JG): Women and men have different roles and responsibilities, as well as social and political status in most developing (and even developed) countries. These differences have left women without the same levels of resources, be they economic, social or political.

MT: So, what leverage do these differences exert, potentially, in—for example—the area of climate change?

JG: What is so important in relation to climate change is that women are the primary producers of food and managers of the environment in many developing economies around the world. FAO states that “if women had the same access to productive resources as men, they could increase yields on their farms by 20–30%, which could reduce the number of hungry people in the world by 12–17% [3]. This simple fact is ignored and misunderstood by policy makers and planners, as well as the general public, who assume that the farmer and environmental manager is a man. Statistical evidence showing the contrary has been ignored for decades. Gender biases and a lack of political will have resulted in an unbalanced resource allocation.

MT: So how could a standard on emissions tailored to the work of women be of benefit to the planet?

JG: The Women’s Carbon Standard attempts to address this gap and is a way to acknowledge women’s contributions to climate change mitigation and thus recognize them not as vulnerable victims of climate change in pacts, but as managers, entrepreneurs and leaders [4].

Fig. 2.1 Lao Woman using biogas. (Photo Credit: © Aiden Dockery)



MT: You see a set of circumstances, deriving from the Standard, whereby women could become a critical collective in reducing greenhouse gas emissions?

JG: If women were provided with adequate resources and empowered through the removal of barriers to their advancement, their contributions to GHG reduction would be vastly enhanced, and initiatives would be more effective and sustainable. Without such a standard, that specifically rewards and incentivizes investments in women, there is not a rigorous system that assures mitigation projects will invite women's engagement and assure they receive equitable benefits.

MT: But what about the carbon standards that are already in play? How does this amplify or compliment current standards, like the existing United Nations Clean Development Mechanism (CDM), or the Verified Carbon Standard (VCS)?

JG: Other standards, including the VCS [5], Gold Standard, CDM [6] etc. do not currently include a focus on women or gender in a way that is rigorous and focused. According to UNFCCC (United Nations Framework Convention on Climate Change) Executive Secretary, Christiana Figueres, though the CDM does have a principle that projects should have equitable benefits for women and assure their participation, in practice there is no way to know if this result is achieved. The VCS has approached WOCAN (at the Navigating the Carbon World in America Conference) to suggest that the WCS be tagged onto the VCS, much in the same way that the CCB (Climate, Community and Biodiversity Standards) has been tagged.

We are keenly interested in doing so, as this demonstrates clearly how the WCS complements an existing standard. Our interest is to find ways to keep monitoring and evaluation costs as minimal as possible, to assure that larger revenues are returned to the women's groups and their activities, so minimizing the steps required to validate and verify [7] the use of both standards makes good sense. As well, the WCS will gain greater market attention, through its link to the VCS (Fig. 2.1).

MT: Jeannette, what is your vision for WOCAN and how can impact investors on Wall Street and elsewhere get involved to help make a difference for women's and child rights, equal opportunity, and for climate change and moral change?

JG: Michael, as was presented and discussed in several recent sessions of the Carbon Expo conference in [8] Barcelona there is a strong interest now expressed by the private sector to link funding for climate change mitigation with co-benefits related to health, energy and livelihood provisions. The WCS is thus a timely mechanism by which corporate social responsibility investments for development goals

(outside of those related to carbon) can be governed by rigorous performance metrics that rely on a system of third party measurement and verification.

WOCAN recently elected to its board Mr. Lee West, bringing with him almost 30 years of financial services and investing background. Lee's goal is to introduce financial incentives that encourage institutional sponsors to invest directly into agricultural development and gender mainstreaming programs in developed and developing countries that directly impact women. Lee feels Wall Street's role in Carbon Finance and Development is driven by three primary factors.

MT: For example?

JG: First, public sources of project financing and international governments are increasingly directing project developers to incorporate standards of women's empowerment and/or equality into the project development cycle, as more evidence suggests that project outcomes improve in instances where gender is considered.

The second driver is that private sources of project financing in the global carbon markets are actively seeking out projects with gender inclusive standards. The WCS will provide benefits beyond emissions reductions, commonly referred to as "co-benefits," such as community development and biodiversity conservation.

MT: That's superb.

JG: Thirdly, there is an increasingly accepted belief that strengthening women's involvement in agriculture and forestry will provide social and economic benefits, primarily in developing countries. In agriculture, closing the gender gap would also provide women with more income, which has proven to improve health, nutrition, and education outcomes for children.

West believes Wall Street will value the WCS incorporation of women's empowerment as a separate co-benefit for an additional premium on each credit.

Similar to the "Fair Trade" label in other socially conscious consumer markets, the WCS tells a story that attracts investment. Like the "Fair Trade" label, higher standards could lead to more value in the overall market. Incorporating women's empowerment as a co-benefit aims to increase the overall value of a credit and help premium projects capture more market share. Lee's role will lead WCS's unique label in helping create the retail marketplace for investment funds that will increase margins associated with the WCS premium credit labeling for investors.

MT: Clearly, this is sorely needed, given that women have been left out of so many critical global ecological equations, a bias that has prevailed at far too many levels for far too long. It is hurting women, their families and the planet.

JG: Exactly. As most development initiatives throughout the globe have paid mere lip service to women's empowerment and gender equality, the WCS provides a unique way to assure that projects—both carbon and non-carbon—contribute to women's empowerment that is measurable [9] and real, avoiding 'gender washing' by projects that do not provide concrete benefits to women.

MT: So how does it work?

JG: The WCS provides a performance-based mechanism that values and compensates women for their contributions to GHG reductions by assuring that projects benefit women through provision of co-benefits and through the repatriation of a percentage of carbon credits [10] back to women's groups.

MT: It's pretty clear that this represents an ecological and gender justice win/win here.

JG: Precisely. WCS supports environmental enhancement and women's well-being at the same time. Carbon projects can thus be leveraged to support women's empowerment and climate mitigation, through investments in women.

MT: And in the short-term future, what do you envision?

JG: Through a widespread application of the use of the WCS, WOCAN will drive new investments to women and their groups, thus enabling them to benefit from climate mitigation activities that free up time, relieve them of time-consuming tasks, such as supplying their households with energy, and enabling their participation in education, entrepreneurial and leadership opportunities. Such programs would demonstrate the value in investing in women for development as well as entrepreneurial outcomes, for wide-reaching impacts.

MT: It's so amazing how a little common sense goes a long ways towards helping the planet, as in this instance. So what do you recommend for that growing body of impact investors throughout the public and private sectors?

JG: Impact investors and individuals can support women's empowerment and mitigate GHG emissions through investing in carbon and non-carbon projects that use the WCS.

MT: What about the acquisition of carbon credits, gender based, in this instance?

JG: Absolutely. Impact investors may purchase Women's Carbon Credits generated by such projects. Such credits will be sold by WOCAN or its affiliates, to assure maximum returns to women's groups themselves, after returning reasonable returns to investors.

MT: Tell me about some of the instances involving WOCAN presently around the world?

JG: As an organization built around a network of over 900 professionals comprising both women and men in environment sectors in 97 countries, with over two decades of experience in capacity building for gender equality and women's leadership, WOCAN is strengthening the capacities of women and men leaders to bring about gender-responsive change within agriculture and environment organizations in several countries of South and South East Asia and eastern and southern Africa. WOCAN is currently implementing an Asian Development Bank financed project, Harnessing Climate Mitigation Initiatives to Benefit Women in Cambodia, Lao

Fig. 2.2 Alternative Energy in Tanzania. (Photo Credit: © Ben Langdon)



PDR and Viet Nam, that will pilot the use of the WCS and bring women access to technologies of biogas, improved cook-stoves and waste management to reduce their labor and generate incomes (Fig. 2.2).

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Chapter 3

The New Business of Business: Evolution of Culture and The Survival of Humankind

Dr. Ervin László is Founder and President of The Club of Budapest, Chancellor of the Giordano Bruno University, Co-founder and Director of the Ervin László Center for Advanced Study, Member of the Hungarian Academy of Sciences, Fellow of the World Academy of Arts and Sciences, Member of the International Academy of Philosophy of Science, and the author or co-author of 54 books. He obtained his PhD from the Sorbonne, in addition to receiving four honorary PhDs. The recipient of numerous international awards, he has twice been nominated for the Nobel Peace Prize, in 2004 and 2005. He lives in a 400 year-old former chapel in the hills of Tuscany (Fig. 3.1).

Michael Tobias (MT): Dr. László, as you have written to me, “Many people say”—and I do so, repeatedly—“that only a thorough transformation of the way we manage ourselves and our environment can avert a major crisis and possibly breakdown.” But why is that? Why now? Is this really the moment it could happen?

Ervin László (EL): When you deal with such complex systems as a living organism, and indeed the whole web of life, there are critical points where change is sudden and decisive. These come to the fore already when we simulate the dynamics of such systems: then we see that in place of the usual periodic and point attractors, so-called “chaotic” or “strange” attractors surface—practically out of the blue, as the systems analysts note.

The evidence for these “critical” or “chaos” points (also known as “systems bifurcations”) is manifold and entirely convincing. Ecosystems reach what is known as a “climax”; species and populations reach crucial “tipping points,” and individual organisms reach a life-or-death point where they can no longer maintain themselves in their environment. When these points are reached, change is sudden and deep-seated.

MT: Total disaster?

EL: Not necessarily. That depends on the kind of system we are dealing with. A system coded by one basic set of information cannot pull out of such states: it must go under. This is the case in regard to biological organisms such as ourselves.

MT: We are mortal.

Fig. 3.1 Dr. Ervin László.
(Photo Credit: Courtesy of
Ervin László)



Fig. 3.2 A primate en route
to extinction? (Photo Credit:
© M. C. Tobias)



Avoiding “Catastrophic Bifurcation” (Fig. 3.2)

EL: Yes. We are irrevocably mortal: we reach such a “catastrophic bifurcation” sooner or later. But a system made up of different species and populations has the option of changing its basic structure. If it reaches a crisis point it can pull out by restructuring the relations between the species and populations that compose it.

MT: How can this distinction nurture a positive orientation in people?

EL: Michael, this is an important distinction. The world we have created on this planet entered a crisis stage not because of the genetic coding and epigenetic mechanisms of the organisms that compose it, but because of the unsustainable nature of the relations between its various species and population. In this situation, our species has become the critical factor.

MT: Evolution dictates biological sustainability, winners and losers. The implications are not hard to divine.

EL: Correct. We have become unsustainable because of the way we relate to the species, the processes and resources, that make up our life-supporting environment. The nature of this relation depends not on our genes but on our culture.

MT: OK. That is truly a major paradigm shift.

EL: I think so; the fact our relationship to the biosphere is not genetically but culturally coded.

MT: And what does that concept say to you? (Fig. 3.3)

Fig. 3.3 True companionship, Borneo. (Photo Credit: © J. G. Morrison)



EL: This gives us the answer we need: We must change our system of ecological relations on this planet. This is a manageable project. It calls for evolving the ensemble of our perceptions, values and aspirations that make up our culture.

MT: When must this “cultural evolution” come about? Is there a ‘deadline’ beyond which things will become more or less irreversible?

EL: Nobody can answer this question with precision. The contemporary world system is so complex that we cannot compute the exact time of its bifurcation points. What we do know is that a catastrophic bifurcation will come IF we do not transform our relations to nature. And the sooner we begin this culture-based human-nature transformation the greater the chance that we reach a new plateau of sustainability will become a reality.

There is real hope here, because cultural evolution, unlike genetic evolution, is both rapid and open to conscious guidance.

The Compelling Role of Consciousness

MT: Let us suppose you are correct; that our culture is the key to evening out the playing field between human civilization and the environment. But there is not one human civilization but hundreds if not thousands shared by the seven billion+ humans that live on the planet, and there is not one environment but thousands of biomes, ecosystems, and possibly as many as 100 million species still co-habiting this miraculous Earth with us. What is the ultimate role of business in embracing a vision for sustainability that is most likely to encompass all the variations in attitude, personality, vision, or lack of vision that now characterize *Homo sapiens*?

EL: If we are to answer this question in relevant detail, we need look at each case of unsustainability in turn. This can be done, and it is being done by scientists and forward-looking business people in many parts of the world. But there is something simple and basic that we can say that applies to all cases and forms of unsustainability. Why is any living system unsustainable? The answer is, because of the faulty way it is attempting to maintain itself in the living state.

MT: The specter of various laws of thermodynamics.

EL: Absolutely. Like Alice, we must keep running just to stay in the same place (and we must run even faster if we are to move forward). If we don’t “run” we run