

A New Social Mission for Research and Education in a Post-Industrial World¹

John Ikerd²

In an ever changing world, it sometimes seems “the only constant is change.” However, some types of change are not usual or constant; some are rare and abrupt. Such change fundamentally reshapes our world. As Peter Drucker, the time-honored writer, scholar, and corporate consultant observed, “Every few hundred years in Western history there occurs a sharp transformation. Within a few decades, society rearranges itself-its worldview; its basic values; its social and political structure, its arts; its key institutions. Fifty years later, there is a new world. We are currently living through just such a transformation. (p 1, Drucker, 1993)”

We are currently living through a time of change that is at least as important as the Industrial Revolution and perhaps as great as the beginning of science. Addressing the challenges of this historic change will require not only new paradigms for political and economic progress but also new scientific understanding of how the world works and our place within it. Researchers and educators have the responsibility of being on the forefront of such changes. Those in higher education are in a unique position to see change first, to analyze best, to understand its significance, and to prepare each new generation for the future. The question today is whether those in higher education will accept this responsibility.

The current transformation is being driven by a search for the answers to contemporary questions of sustainability. Most definitions of sustainability are rooted in the 1987 United Nations report of the World Commission on Environment and Development that concluded sustainable development must be able to meet the basic needs of present generations without compromising opportunities for generations of the future (United Nations, 1987). Sustainability is ultimately about equality of opportunity, within and across generations. Despite an impressive record of economic and material progress, there are growing indications the current paradigm of industrial economic development is simply not compatible with long run ecological, social, or economic sustainability.

Today, the twin threats of “peak oil” and global climate change are creating a global awakening to the importance and urgency of addressing issues of sustainability. The concept of peak oil relates to the fact that it takes about 30 to 40 years to bring a newly discovered oil field into “peak” production (Murphy, 2008). At that point, about half of the total quantity of recoverable oil remains in the ground. However, the last half is invariably more difficult and costly to retrieve, and after the peak, annual production invariably declines. U.S. oil discoveries

¹ Prepared for presentation at the 3rd annual *WIU Faculty Research Symposium*, “Social Responsibility in Academic Research,” Center for Innovation in Teaching & Research, Western Illinois University, Macomb, IL, Nov.14, 2008.

² John Ikerd is Professor Emeritus, University of Missouri, Columbia, MO - USA; Author of, *Sustainable Capitalism*, <http://www.kpbooks.com>, *A Return to Common Sense*, <http://www.rtedwards.com/books/171/>, *Small Farms are Real Farms*, Acres USA, <http://www.acresusa.com/other/contact.htm>, and *Crisis and Opportunity: Sustainability in American Agriculture*, University of Nebraska Press <http://nebraskapress.unl.edu>; Email: JEIkerd@centurytel.net; Website: <http://faculty.missouri.edu/ikerdj/>.

peaked in the late 1930s and 1940s. U.S. oil production peaked in 1971 and has been declining ever since. The peak in global oil discoveries was in 1962. Estimates range from 2005 to 2025 for the peak year of global oil production (Hirsch, 2005). Other fossil energy sources, including natural gas and coal, have similar patterns of discovery and use and all are expected to peak within the next few decades. In addition, all renewable sources of energy for the future - wind, water, solar - will be less plentiful and more costly. The world is not running out of energy, at least not yet, but it is running out of “cheap energy.”

Global climate change is a direct consequence of fossil energy depletion. All fossil energy is biological in origin. It is stored in the bonds that connect molecules of carbon, hydrogen, oxygen, the major elements forming the tissues of biological organisms. When energy is released, these bonds are broken and the various chemical elements, including carbon dioxide and other greenhouse gases, are released into the environment. This problem is intrinsic for all sources of fossil energy - particularly for coal, the most abundant remaining source of fossil energy. Petroleum shortfalls cannot be offset by using coal or other fossil energy sources without exacerbating risks of global climate change. The preponderance of scientific evidence indicates that industrial development is a major contributor of greenhouse gases and that a fundamental change will be required to avoid catastrophic changes in global climate (Gore, 2006).

An equally important, though less appreciated, challenge to sustainability is the growing disparity of incomes between the rich and the poor, in the U.S. and around the world. At no time since the “gilded age” of a century ago has the American middleclass benefitted so little from economic growth. Today, the top *one percent* of Americans makes as much money as the entire bottom one-half. In the words of Alan Greenspan, former Federal Reserve Chairman (Greenspan 2005), “The income gap between the rich and the rest of the U.S. population has become so wide, and is growing so fast, that it might eventually threaten the stability of democratic capitalism itself.” The gap between the rich and poor nations of the world is growing even faster, which is an even greater threat to global stability and sustainability. Over the past 40 years, the income share of the poorest 20% of people in the world *decreased* by almost 50%, while the incomes of the richest 20% *increased* by 40% (p 24, Murphy, 2008). The current global financial crisis is a direct consequence of the exploitation of the poor and weak by the rich and powerful in a futile attempt to maintain an illusion of endless prosperity in a world running out of energy.

All questions of sustainability are ultimately questions of energy. Everything that is of use to us - our cars, houses, clothes, food - requires energy to make, energy to use; in fact, all material things are simply concentrated forms of energy. All useful human activities - working, managing, thinking - also require energy. In addition, humans are capable of being “useful” only after they have been nurtured, socialized, and educated, all of which require energy. According to the basic laws of physics, energy is never destroyed by use, but each time it is used and reused, some of its usefulness is lost. This is the essence of the law of entropy. Conserving, reusing, and recycling stored energy can improve the efficiency of energy use, but cannot offset the inevitable loss of useful energy to entropy.

The fundamental problem arises from today's capitalist economies that provide powerful incentives to use and reuse energy but provide no incentives to collect and store solar energy, the only source of *new* energy, to offset the usefulness of energy lost to entropy. Economic value is

inherently individualistic in nature; it accrues to individuals, and thus, must be expected to accrue at least during an individual's lifetime. It makes no economic sense to invest anything for the sole benefit of someone else, not for the benefit of society in general and certainly not for those of some unknown future generation. An economy driven by economic self-interest, as is increasingly the case in all modern capitalist economies, actually accelerates the tendency toward entropy. Such economics are not ecologically sustainable.

Capitalist economies also dissipate *social* energy, because they weaken human relationships. Economic efficiency requires that people relate to each other *impartially*, which means *impersonally*. People compete rather than cooperate and personal relationships are transformed into economic transactions. To succeed economically, people must give priority to work over friendships, family, and community. Their pursuit of individual self-interests depletes social energy needed to create productive people and accelerates the tendency toward entropy. Whenever capitalist economies are unrestrained by social and ethical values, as is increasing the case today, they inevitably lead to growing economic and social inequities. Such economies are not socially sustainable.

All economic value comes either from nature or from society. An economy creates nothing; it is simply a means of facilitating individual relationships with each other and with the earth. If we continue to extract and exploit the usefulness of nature and to exploit society, eventually there will be no remaining source of economic value. Unrestrained capitalist economies accelerate the tendency toward economic entropy. Today's capitalist economies are not economically sustainable (Ikerd, 2004).

These concerns have helped raised awareness regarding the role of institutions of higher education in guiding the individual decisions and collective actions of a society in search of ecological, societal, and economic sustainability. This raised awareness is reflected in a renewed interest in participatory research, service learning, and other interactive and integrative approaches to learning and teaching. During times of great change, humans must reassess not only their understanding of nature and society but also how they value the earth and how they value each other. Insightful leaders must step forward to identify where essential physical, social, and economic changes are not only possible but also ethically and socially responsible. Approaches such as participatory research and service learning reinforce our understanding of fundamental ecological, social, and economic principles and values that must guide our relationships with other people and with the earth if human civilization is to be sustainable.

Creating sustainable economies and societies will require new ways of thinking. As Albert Einstein once pointed out, "We cannot solve our problems with the same thinking we used when we created them." The industrial development paradigm, which has dominated thinking for the past two centuries, is based on a mechanistic view of the world. The world is a big, complex machine that can be disassembled into its component parts. Sustainable development must respect the fact that the world is a living natural ecosystem, and living things cannot be separated without destroying the essence of the whole. Humanity is an integral aspect of that inseparable whole. Sustainable societies must mimic the natural processes of living, biological systems, as living things have the capacity to capture and store solar energy to offset the energy inevitably lost to

entropy. We have the capacity to be useful and productive while devoting a significant portion of their life's energy to renewal and regeneration or our communities and our species.

Plants capture solar energy with their leaves and store it in their cells. We humans are also capable of capturing and storing solar energy; we do it with windmills, dams, and photovoltaic cells. We also have an inherent tendency to produce and reproduce, even when we have no economic incentive to do so. Otherwise, few of us would choose to raise children. Sustainability requires that we must respect this basic human tendency by diverting a significant portion of the earth's energy from economic uses to renewal and regeneration. It will take energy to rebuild and redesign the windmills, dams, photovoltaic, and other solar collection systems needed to sustain future generations. And perhaps most important, we must continue to divert a significant portion of our human energy from economic uses to renewing families, communities, and civil societies, to ensure that future energy is put to constructive rather than destructive uses.

The fundamental question facing global society today is whether people will be willing to forego some level of individual economic self-interest to ensure the long run sustainability of humanity. If we continue behaving like non-thinking animals, following our most basic individual instincts and urges, our species will suffer the same fate as any other non-human species that finds itself in a position of dominance in its ecological environment. We will continue to expand our population and consumption until we degrade and deplete the resources that must sustain us. Our society will degenerate into chaos, we will suffer mass starvation and epidemic disease, and the human population of the earth will plummet.

Research and education have a social responsibility to be on the frontlines of the movement to create a new sustainable human society. The challenge of research is to develop a new “scientific method” that is capable of providing deeper insights into the critical interrelationships within holistic, inseparable, dynamic, living systems. The traditional scientific method seeks to understand wholes by first understanding their individual parts. The new scientific method must begin with an intuitive and insightful understanding of wholes in order to understand the purpose and meaning of their individual parts. It must proceed from wisdom to knowledge in order to gain understanding from observation. The researcher is inseparable from his or her research.

The challenge for education is to develop a new pedagogical model that embraces interdependence and promotes social connectedness and trust, yet is dynamic, active, and continually evolving. People must be prepared for a lifetime of education, to continually grow in wisdom from newly acquired knowledge. Traditional education models cannot guarantee adequate preparation for an unknown future; thus, service-learning will become an important aspect of the new educational paradigm. The educator is inseparable from his or her students.

Most important, those in higher education no longer have the luxury of “value free” research and education. Sustainability, at its roots, is an ethical matter. The only responsibility those of current generations have for those of future generations is their moral or ethical responsibility for the future of humanity. We have no economic interest in those seven generations in the future; we will all be dead. We have no social interest in future generations; our friends and families will all be dead and we may not even have any living descendants. Those of future generations cannot participate in markets or political processes to ensure that adequate resources are left to

meet their needs. The only hope for sustainability of civil human society is for people today to accept their ethical and moral responsibilities to humanity - to meet their own needs without compromising the opportunities of others, including those of the future.

Researchers and educators can no longer continue the myth of ethical and social neutrality. The technologies being used to extract and exploit the resources of the earth are based on scientific discoveries that supposedly were objective and “value neutral.” Scientists claim to seek truth, without regard to how their findings may be used. The discipline of economics also claims “value neutrality.” However, today's economic system is using scientific discoveries to extract and exploit the earth and its people. Neither physical scientists nor economists have any reason to believe that the ultimate outcome of their work will be otherwise. In the name of scientific objectivity, institutions of higher learning have removed themselves from the normal human processes of validating, rejecting, and reshaping the ethical and moral values of society. In the process, they have become passive, yet knowing, participants in the exploitation of the earth.

The ethics of sustainability are not religious or political but instead are fundamentally and purely philosophical. Philosophy is ultimately about questions of right and wrong, good and bad. Yet for decades, Doctors of Philosophy have been reluctant to “philosophize” about anything of significance, allowing philosophy to degenerate into a study of the history of philosophy. Those searching for answers of questions of right and wrong have been left “uneducated” and vulnerable to religious, political, and economic dogma.

The philosophical principles of sustainability, as with all first principles, must be accepted as a matter of faith. First, life has purpose. We cannot prove that life has purpose because purpose is always determined as some higher level of organization - in the case of life, at a level beyond our ability to observe or fully comprehend. If life had no purpose, however, there would be no right or wrong, and it would make no difference whether we showed any concern for those of future generations. Second, all life is interconnected. We cannot prove that life is interconnected, but if life were not interconnected, specifically across time, we would be incapable of doing anything for the benefit of those of future generations. Even if life has purpose, sustainability would then be an exercise in futility. Finally, life is good. We cannot prove that life is good, but if life is not good, then there is no reason to be concerned about other living things, the future of human life on earth, or even our own life.

Aldo Leopold's land ethic provides a powerful expression of principles of purpose, interdependence, and love of life: “A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise” (p 262, Leopold 1949). A social corollary would be “A thing is right when it tends to preserve the integrity, stability, and beauty of the human community. It is wrong when it tends otherwise.” Only when we preserve the integrity, stability, and beauty of self-renewing, regenerative, living biotic and human communities can we sustain our economies, societies, and humanity.

If our public institutions of higher education were to adopt this moral ethic of sustainability it would fundamentally change the nature of our research and education programs and dramatically influence the evolution of civil society and humanity. Publicly funded research would no longer develop technologies to facilitate the extraction and exploitation of natural and human resources. Publicly funded research would be restricted to furthering the common good, to preserving the

integrity, stability, and beauty of nature and society. It would no longer be considered ethical for public education to indoctrinate and train workers for extraction and exploitation. Publicly funded education would be restricted to learning that preserves the integrity, stability, and beauty of nature and society. There would be a clear distinction in higher education between the pursuit of individual self-interests and pursuit of the common good, and the focus of public higher education would be on preparing people to pursue the common good by protecting the good of the commons.

We are in the midst of a great transformation in human history. Fossil energy depletion, global climate change, and growing social and economic inequity are symptoms of an economy and a society that are grasping to extract and exploit the rapidly dwindling natural and human resources of an increasingly impoverished earth. The changes we are experiencing today are not the usual, expected, or constant changes. We are experiencing the death of an old era and the birth of fundamentally different time in human history.

Scientists and educators have the intellectual ability to understand the nature and magnitude of the threats that confront global society today. They have the means of addressing today's challenges to sustainability. They lack only the moral courage to proclaim the truth of the ethical and intellectual principles and values of sustainability. A society unguided by logical ethical principles and rational social values is simply not sustainable, nor does it provide a very good place to live. The new social mission of research and education is to discover and to teach the wisdom, knowledge, and information needed to create a new and fundamentally better post-industrial world.

References:

Drucker, Peter. *Post-Capitalist Society* (New York: HarperCollins Publishers, 1993).

Gore, Al. *An Inconvenient Truth: The Planetary Emergency of Global Warming and What We Can Do About It* (Emmaus, PA: Rodale Press, 2006).

Greenspan, A. Quoted in: Rich-poor gap gaining attention, *Christian Science Monitor*, 14 June 2005, available at: <http://www.csmonitor.com/2005/0614/p01s03-usec.html>.

Hirsch Robert L. "The Inevitable Peaking of World Oil Production." *The Atlantic Coast Council of the United States, Bulletin XVI, No 3, October 2005.* http://www.acus.org/docs/051007-Hirsch_World_Oil_Production.pdf.

Ikerd, John, *Sustainable Capitalism: A Matter of Common Sense* (Bloomfield, CT: Kumarian Press, 2004).

Leopold, Aldo, *A Sand County Almanac.* (1949; New York: Ballantine Books, Random House Inc.,1966).

Murphy, Patrick. *Plan C: Community Survival Strategies for Peak Oil and Climate Change* (Gabriola Island, BC: New Society Publishers, 2008).

United Nations. "Report of the World Commission on Environment and Development", Special Report, 1987, available at <http://www.un.org/documents/ga/res/42/ares42-197.htm>.