THE THIRD EYE OF INDUSTRIAL ECOLOGY

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Five years ago, when I left Wall Street for oil and gas development, I never dreamed that this change in career would completely change my life. I struck it rich! Not from oil, but from a gusher of new learning. I learned about energy. I learned about the environment. I was stunned when I learned how little I knew about how our planet works. I developed something more important to me than oil. I grew an allegorical third eye. This third eye, as I am sure most of you know, simply enables you to look beyond the end of your nose. It adds insight to eyesight.

Education is the key. It is the obvious vehicle to carry us out of the Machine Age into the Age of Integrated Information Systems. I quickly realized that we must not only change course in the route we take into this new age, but we must accelerate the rate and the right kind of change. We have to educate people of all ages. Adults now in charge have a lot to unlearn, as I did, as well as much to learn. We cannot wait for better educated kids to grow up to do things better. Winston Churchill is supposed to have said that Americans always do the right thing, after they have tried everything else. The world no longer has this luxury. As a graduate of the US military industrial complex, I felt best connected to start promoting change where the leverage is: business and industry, business and engineering schools and professional societies.

Why? Of the 100 entities in the world with the most economic clout, a Conference Board survey shows that nearly half of them are companies. The rest are countries. Every one of these large companies each has more economic power than the majority of the individual member countries of the United Nations Organization. The 500 largest corporations in the world - a tiny fraction of all firms - generate 25% of the world's output. Industry is not an agent of change; it is the vehicle of change.

The Gross World Product is about $25 trillion annually now with nearly 6 billion people on the planet. It could reach $100 trillion with a projected world population of well over 10 billion within a single human lifetime. The potential increase in environmental impact could be devastating.

What can be done? In my self-appointed mission of sounding wake-up calls these past five years, I have experienced a few rebuffs and some successes, but lots of yawns and blank stares. The industrial world is heavily populated with two-eyed managers and engineers partly blinded by their deep seated aversion to environmental "wackos" and meddlesome bureaucrats. Our business and engineering schools have too many faculty members who never look up from their notes. Moreover, the mainstream mindset is still rooted in linear, mechanistic 17th century science. There are a growing number of notable exceptions, but too many companies are still focused only on compliance, remediation and the next quarterly earnings report.

However, I am delighted to see how much progress has been made by many leading corporations, especially by those represented here this evening. The typical experience of environmentally responsible companies is that pollution prevention and waste reduction pay off. This is usually true in the short run and is essential in the longer run for continued competitiveness and a sustainable bottom line. The message that a healthy economy and a healthy environment are interdependent is lost on managers and engineers who believe otherwise for whatever reason.

Can we learn anything from nature? There is a well known experiment conducted in biology labs of the fruit fly population which doubles every minute in a jar until the jar is full in one hour. Question: when is the jar half full? The answer is not 30 minutes. If the population doubles every minute the jar is half full in 59 minutes. At 55 minutes the jar is only 3% full! When the fruit fly population reaches the carrying capacity of the jar, the lack of enough air, light and food produces a population crash. Most die out and the doubling process of exponential growth starts all over again! When do you think the fruit flies start to get worried? Much too late, if ever.

There may be some flies in the jar with a third eye. They might try to warn the others. Human history tells us that individuals with highly developed third eyes will initially be ignored. If they persist in their views, they will be ridiculed, then attacked. If they are still alive and kicking, and their views are too far out, they will finally be fired, jailed, excommunicated or worse. Of those two-eyed flies who pay attention to the warnings, most, if they behave like human beings, will put off action until it is too late. This pervasive and costly human habit of procrastination is another reason we must double our efforts to accelerate the rate of needed change.

My own third eye development has only reached the common sense level of protecting public health and the earth's life support systems. Since common sense is still tolerated by most people, I have not yet been attacked or punished. My third eye now sees reality as more organic than mechanic, as do most earth and life scientists. That is what the Biopolitics International Organisation is all about. I also like very much what I see in the principles of industrial ecology. Industrial ecology is the objective, multidisciplinary study of industrial and economic systems and

their linkages with natural systems. It can be thought of as the science and technology of complexity, global change and sustainability.

There are other barriers to accelerated change in addition to traditional mindsets, third eye impairment and procrastination. Again, these have to do with human nature, not Mother Nature. Characteristics such as habit, complacency, ego, pride, fear and denial. These traits are especially intractable when they are institutionalized. A classic example recently was the spectacle of seven top executives of the large US tobacco companies testifying before a congressional committee. To a man they contended that nicotine is not addictive, despite all the experience and suppressed evidence to the contrary. These generously rewarded, generally respected, law abiding business leaders knowingly market products that kill their customers. This is an egregious example of what we can be up against when institutionalized irresponsibility is combined with enormous economic power.

As the Russians say: "when money talks, the truth is silent." I do not propose to psychoanalyze institutional behavior this evening. Corporate cultures vary widely. However, there is one important problem affecting every company that even the most progressive companies are just beginning to address. Too many firms still do not know exactly how much waste they are producing, what is in it, nor how much it is really costing them or others, especially over a product's lifetime.

In a resource abundant country like America, waste is too often considered a normal cost of doing business instead of lost profit. There is an important reason for this. Our traditional cost accounting system is badly in need of updating and repair. Our economic scorekeeping does not disclose full costs and is consequently rigged against the environment, against fairness and against future generation. It does not even serve well the managers that use it because they do not benefit from full disclosure of all the information required to make responsible decisions. In golf, not counting all the strokes is called cheating. In our industrial economy, it is called efficiency. Industrial managers are not cheating. They are following the rules. It is the conventional accounting rules that need fixing so all the strokes can be counted.

We are constantly being reminded that we are entering a much heralded Information Age. New amazing hardware and software, however, will still be largely at the service of commercial and bureaucratic mindware, good and bad. Our experience with commercial multi-media communications has not been a total success. Our air waves are now even more polluted than our air. The level of public communications has become increasingly crude, deceptive and self-serving. Disinformation from anti-environmental groups is intended to confuse and prevent action on complex environmental issues while the cost of being wrong or acting too late on these matters is steadily rising. I believe intellectual capital formation and information dominance will be key success factors in the Information Age. Enterprises that can develop superior integrated information technologies within a corporate culture of continuous learning will be hardest to compete against and more sustainable in the long run.

Let me put a proposal on the table. Among other things, I am a co-founder of Project RENEWAL in New Jersey (Resource Efficiency Network to Eliminate Waste and Liability). Its purpose is to improve capital equipment replacement decisions and to provide both an educational and financial return on impaired assets. Project RENEWAL combines:

- life cycle thinking
- activity based and total cost accounting and control
- proven and profitable resource recovery practices

It seeks to integrate the management of environment-related activities into a company's strategic information and decision making system. The goal is to extend the economic life spans of products and life cycles of materials with better decision support tools for both buyers and sellers of capital goods. Our proposed pilot project is being offered on a pro bono basis. So far we have had no takers. This may be an indication that the Western World needs sustainable third eye development as much as the Third World needs sustainable economic development.

Why do I say this? About 98% of DNA in chimpanzees and human beings is the same. The 2% difference is in the superior human brain. Even so, we are told by neuroscientists that most of our potential human brain power is unconnected. Most of our neurons are wasted. Reduction of this waste should be the over-arching goal of all humankind. Brain research is already giving us new insights into the different ways we learn, think and behave. This information is vital to our understanding of third eye development and the process of transformative change.

The most challenging new frontier in the new Information Age is not digital. It is in learning how to use mind boggling new tools so that they do more good than harm. It is learning how to use our full human potential and benefit from more third eye leadership. Our most meaningful collective challenge is to improve the content of public and private communications, and to enhance the quality as well as the quantity of social dialogue. It is in improving our ability to organize and process information so that decisions to increase financial income will not be at the expense of social outcome. Learning and adapting to change is the story of survival. Learning and creating needed change is the story of progress. It is widening that 2% gap between us and the chimps.

Yes, pollution prevention, and a just and sustainable society, begin between the ears. Learning, and then acting accordingly, is what this whole environmental thing is all about. I salute you, Dr. Vlavianos-Arvanitis, for your wonderful leadership in helping to accelerate the rate of needed change toward a cleaner and better world.

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