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The NEXT Industrial Revolution

"Eco-efficiency," the current industrial buzzword, will neither save the environment nor foster ingenuity and productivity, the authors say. They propose a new approach that aims to solve rather than alleviate the problems that industry makes

by [William McDonough](#) and [Michael Braungart](#)

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(The online version of this article appears in three parts. [Click here to go to part two.](#) [Click here to go to part three.](#))

IN the spring of 1912 one of the largest moving objects ever created by human beings left Southampton and began gliding toward New York. It was the epitome of its industrial age -- a potent representation of



technology, prosperity, luxury, and progress. It weighed 66,000 tons. Its steel hull stretched the length of four city blocks. Each of its steam engines was the size of a townhouse. And it was headed for a disastrous encounter with the natural world.

This vessel, of course, was the *Titanic* -- a brute of a ship, seemingly impervious to the details of nature. In the minds of the captain, the crew, and many of the passengers, nothing could sink it.

Discuss this article in the **Politics & Society** conference of **Post & Riposte**.

From the archives:

- **"A Good Climate for Investment,"** by **Ross Gelbspan** (June, 1998)

Reducing reliance on carbon for energy -- to safeguard our atmosphere and our climate -- could bring about not personal deprivation but a worldwide economic boom.

One might say that the infrastructure created by the Industrial Revolution of the nineteenth century resembles such a steamship. It is powered by fossil fuels, nuclear reactors, and chemicals. It is pouring waste into the water and smoke into the sky. It is attempting to work by its own rules, contrary to those of the natural world. And although it may seem invincible, its fundamental design flaws presage disaster. Yet many people still believe that with a few minor alterations, this infrastructure can take us safely and prosperously into the future.

During the Industrial Revolution resources seemed inexhaustible and nature was viewed as something to be tamed and civilized. Recently, however, some leading industrialists have begun to realize that traditional ways of doing things may not be sustainable over the long term. "What we thought was boundless has limits," Robert Shapiro, the chairman and chief executive officer of Monsanto, said in a 1997

- **"A Special Moment in History,"** by **Bill McKibben** (May, 1998)

The fate of our planet will be determined in the next few decades, through our technological, lifestyle, and population choices.

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Related links:

- **"Eco-Efficiency and Cleaner Production: Charting the Course to Sustainability"**

A report on The United Nations Environment Program and the World Business Council for Sustainable Development's collaborative efforts to promote eco-

interview, "and we're beginning to hit them."

The 1992 Earth Summit in Rio de Janeiro, led by the Canadian businessman Maurice Strong, recognized those limits.

Approximately 30,000 people from around the world, including more than a hundred world leaders and representatives of 167 countries, gathered in Rio de Janeiro to respond to troubling symptoms of environmental decline. Although there was sharp disappointment afterward that no binding agreement had been reached at the summit, many industrial participants touted a particular strategy: eco-efficiency. The machines of industry would be refitted with cleaner, faster, quieter engines. Prosperity would remain unobstructed, and economic and organizational structures would remain intact. The hope was that eco-efficiency would transform human industry from a system that takes, makes, and wastes into one that integrates economic, environmental, and ethical concerns. Eco-efficiency is now considered by industries across the globe to be the strategy of choice for change.

What is eco-efficiency? Primarily, the term means "doing more with less" -- a precept that has its roots in early industrialization. Henry Ford was adamant about lean and clean operating policies; he saved his company money by recycling and reusing materials, reduced the use of natural resources, minimized packaging, and set

efficiency and cleaner production.

- **McDonough Braungart Design Chemistry**

"William McDonough and Michael Braungart founded MBDC in 1995 to realize their intention of fostering the 'Next Industrial Revolution' through better design."

- **The US Green Building Council**

The Web site of "the building industry's only balanced nonprofit consensus coalition promoting the understanding, development and accelerated implementation of 'Green Building' policies, programs, technologies,

new standards with his timesaving assembly line. Ford wrote in 1926, "You must get the most out of the power, out of the material, and out of the time" -- a credo that could hang today on the wall of any eco-efficient factory. The linkage of efficiency with sustaining the environment was perhaps most famously articulated in *Our Common Future*, a report published in 1987 by the United Nations' World Commission on Environment and Development. *Our Common Future* warned that if pollution control were not intensified, property and ecosystems would be threatened, and existence would become unpleasant and even harmful to human health in some cities. "Industries and industrial operations should be encouraged that are more efficient in terms of resource use, that generate less pollution and waste, that are based on the use of renewable rather than non-renewable resources, and that minimize irreversible adverse impacts on human health and the environment," the commission stated in its agenda for change.

The term "eco-efficiency" was promoted five years later, by the Business Council (now the World Business Council) for Sustainable Development, a group of forty-eight industrial sponsors including Dow, Du Pont, Con Agra, and Chevron, who brought a business perspective to the Earth Summit. The council presented its call for change in practical terms, focusing on what businesses had to gain from a new ecological awareness rather than on what the

standards and design practices."

- **Sustainable Development Links**

A collection of links to sites dealing with development and the environment.

environment had to lose if industry continued in current patterns. In *Changing Course*, a report released just before the summit, the group's founder, Stephan Schmidheiny, stressed the importance of eco-efficiency for all companies that aimed to be competitive, sustainable, and successful over the long term. In 1996 Schmidheiny said, "I predict that within a decade it is going to be next to impossible for a business to be competitive without also being 'eco-efficient' -- adding more value to a good or service while using fewer resources and releasing less pollution."

As Schmidheiny predicted, eco-efficiency has been working its way into industry with extraordinary success. The corporations committing themselves to it continue to increase in number, and include such big names as Monsanto, 3M, and Johnson & Johnson. Its famous three *Rs* -- reduce, reuse, recycle -- are steadily gaining popularity in the home as well as the workplace. The trend stems in part from eco-efficiency's economic benefits, which can be considerable: 3M, for example, has saved more than \$750 million through pollution-prevention projects, and other companies, too, claim to be realizing big savings. Naturally, reducing resource consumption, energy use, emissions, and wastes has implications for the environment as well. When one hears that Du Pont has cut its emissions of airborne cancer-causing chemicals by almost 75 percent since 1987, one can't help feeling more secure. This is

another benefit of eco-efficiency: it diminishes guilt and fear. By subscribing to eco-efficiency, people and industries can be less "bad" and less fearful about the future. Or can they?



Eco-efficiency is an outwardly admirable and certainly well-intended concept, but, unfortunately, it is not a strategy for success over the long term, because it does not reach deep enough. It works within the same system that caused the problem in the first place, slowing it down with moral proscriptions and punitive demands. It presents little more than an illusion of change. Relying on eco-efficiency to save the environment will in fact achieve the opposite -- it will let industry finish off everything quietly, persistently, and completely.

We are forwarding a reshaping of human

industry -- what we and the author Paul Hawken call the Next Industrial Revolution. Leaders of this movement include many people in diverse fields, among them commerce, politics, the humanities, science, engineering, and education. Especially notable are the businessman Ray Anderson; the philanthropist Teresa Heinz; the Chattanooga city councilman Dave Crockett; the physicist Amory Lovins; the environmental-studies professor David W. Orr; the environmentalists Sarah Severn, Dianne Dillon Ridgley, and Susan Lyons; the environmental product developer Heidi Holt; the ecological designer John Todd; and the writer Nancy Jack Todd. We are focused here on a new way of designing industrial production. As an architect and industrial designer and a chemist who have worked with both commercial and ecological systems, we see conflict between industry and the environment as a design problem -- a very big design problem.

Continued...

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Illustrations by Brian Cronin

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