

Q and A

“If books are destroying the forests, will e-books save them?”

by Eva Filoramo

Sally Hughes, senior lecturer at Oxford Brookes University, specializing in design, typography and uses of technology in publishing

No, e-books will not save the forests. While e-books are an economically viable alternative format for reading, they will not replace printed books at levels sufficient to save more than a few trees. More paper is used for books and magazines now than ever before. However, environmentally responsible publishers use paper from renewable sources. The Forest Stewardship Council and the European Union set standards for the management of the world's forests and certify products which source wood from these forests. Book made from paper which comes from forests managed under these standards display the FSC or the EU Flower logo.

The next time you buy a book, check to see if the paper complies with these standards. If it doesn't, contact the publisher to ask why

not. Using paper from trees that are managed for sustainability will save more forests than all the e-books in the world.

James Geary, journalist and author of *The world in a phrase* (Bloomsbury, 2005; the Italian edition will be published by Rizzoli in October)

If books ever disappeared, I wouldn't know what to decorate the walls of my house with. The claim is periodically made that electronic books will replace the physical objects some time soon, very soon. To date, though, the most successful digital innovation in terms of book publishing has been sites like lulu.com that allow anyone to layout and design his or her own magnum opus and then have it published – on good, old-fashioned paper!

English literary critic Cyril Connolly once observed, “Literature is the art of writing something that will be read twice; journalism what will be grasped at once.” News is thus perfectly suited to the digital medium: it can be published fast, updated quickly, and it costs next to nothing while saving the lives of thousands of trees. So I wouldn't be surprised to see newspapers di-

sappear completely as physical objects soon, very soon. Of course, before they do vanish, we will need convenient and user-friendly forms of digital readers and electronic paper.

Magazines are also migrating to the web, where new forms of narrative and design can be explored. Yet I suspect physical magazines will survive: they will become more artful, more crafty and contain exclusive content not offered online. The magazine as physical object will become a luxury product. In other words, magazines will aspire to become books.

A great book is not something you pick up, read, put down and forget about. A great book stays with you and becomes part of you. But because literature, great literature, demands to be read twice, sometimes much more than twice, we want the physical object to go back to. We want to scribble notes and score exclamation points into the margins. A great book is something to keep and treasure, something to consult.

So, improvements in digital reading devices and e-paper will certainly make paper-based books more scarce. That's fine. Great literature has been leaping off the

printed page long before the invention of the internet. Yet there will always be a devoted, if perhaps dwindling, market for books as objects, the solid ground from which our imaginations take flight.

Natural capital

by L. Hunter Lovins

There is one perfect factory on our planet, which uses only solar energy, recycles every bit of waste, and has a wonderful designer: it is nature. Biomimicry invites us to draw inspiration from nature to innovate industrial processes, consumption, packaging and aesthetics, making them sustainable.

In 1999, executives at DuPont boldly pledged to reduce the company's greenhouse gas emissions 65% below their 1990 levels by 2010 as part of a company-wide strategy to lighten its environmental impact. The plan, in part, was to diversify the product line –shedding divisions such as nylon and pharmaceuticals to focus on materials that reduce greenhouse gases, such as Tyvek house wraps for energy efficiency. The plan

worked: by 2007 DuPont had cut emissions 72% below 1991 levels, reduced its global energy use 7%, and, in the process, saved itself 3 billion dollars. DuPont now plans to go beyond mere efficiency improvements to make products that mimic nature, including plant-based chemicals like Bio-Pdo that can replace petroleum in polymers, detergents, cosmetics, and antifreeze.

DuPont's actions – and similar ones in dozens of other firms – reflect a recognition that the way goods and services are produced must be radically rethought in this sustainability century. Over the past 100 years, the way humans made and sold goods and services took a heavy toll. Now, smart companies recognize the need to move beyond business as usual to meet people's needs in sustainable ways. Every year the world digs up, puts through various resource crunching processes, and then throws away over a half-trillion tons of stuff. Less than 1% of the materials is embodied in a product and still there six months after sale. All of the rest is waste. In March 2005, United Nations secretary-general Kofi Annan observed that “the very basis for life on earth is declining at an alarming rate.”

By the time most human artifacts have been designed but before they have been built, 80-90% of their lifecycle economic and ecological costs have already become inevitable. For example, this book you are holding, the seat in which you are sitting, the airplane in which you may be flying, the terminal at which you will land, the vehicle in which you will continue your trip are all the result of myriad choices made by policymakers, designers, engineers, craftspeople, marketers, distributors, and so on.

Each step represents opportunities to deliver the idea, the part, or the production process in ways that use more or fewer resources and result in a superior or suboptimal end-result. Thinking in a more holistic way and choosing more wisely at each step can reduce the impacts of these choices on the planet and its inhabitants.

This is the foundation of natural capitalism, the framework of sustainability that describes how to meet needs in ways that achieve durable competitive advantage, solve most of the environmental and many of the social challenges facing the planet at a profit, and ensure a higher quality of life for all people. It is based on three principles: 1. buy the time that is urgently needed to deal with the growing challenges facing the planet by using all resources far more productively; 2. redesign how we make all products and provide services, using such approaches as biomimicry and cradle to cradle; 3. manage all institutions to be restorative of human and natural capital.

The good news is that meeting human needs while using less stuff can be more profitable and can deliver a higher standard of living than continuing with current practices. Combined with efforts to lower consumption, practices that raise resource efficiency, circulate materials rather than dump them, and imitate nature offer a new model of prosperity for an environmentally degraded and poverty-stricken planet.

Following nature's lead

Biomimicry, the conscious emulation of life's genius, is an even more profound approach to making manufacturing sustainable. Janine Benyus, author of the

groundbreaking book *Biomimicry*, asks the simple question, How would nature do business? She points out that nature delivers a wide array of products and services, but very differently from the way humans do. Nature, for example, runs on sunlight, not high flows of fossil energy. It manufactures everything at room temperature, next to something that is alive. It makes very dangerous substances, as anyone who has been in proximity to a rattlesnake knows well, but nothing like nuclear waste, which remains deadly for millennia. It creates no waste, using the output of all processes as the input to some other process. Nature shops locally and creates beauty. Buckminster Fuller once pointed out that “When I am working on a problem I never think about beauty. I only think about how to solve the problem. But when I have finished, if the solution is not beautiful, I know it is wrong.”

The discipline of biomimicry takes nature's best ideas as a mentor and then imitates these designs and processes to solve human problems. Dozens of leading industrial companies – from Interface Carpets and AT&T to 3M, Hughes Aircraft, Arup Engineers, DuPont, General Electric, Herman Miller, Nike, Royal Dutch Shell, Patagonia, SC Johnson, and many more – use the principles of biomimicry to drive innovation, design superior products, and implement production processes that cost less and work better.

Biomimicry invites innovators to turn to the natural world for inspiration, then evaluate the resulting design for adaptiveness in the manufacturing process, the packaging, all the way through to shipping, distribution, and take-back

decisions. It ensures that the energy used, production methods chosen, chemical processing, and distribution are part of a whole system that reduces materials use, is clean and benign by design, and eliminates the costs that last century's technologies imposed on society and the living world.

EcoCover Limited of New Zealand used the concept that in nature there is no waste – the output of all processes is food for some other process – to develop an organically certified, biodegradable mulch mat to substitute for black plastic sheeting used in agriculture to prevent moisture loss and weed growth. Using shredded waste paper that would otherwise have gone to landfill, bound together with fish waste, the material is produced by previously unemployed people.

The product uses waste to improve soil productivity, conserve soil moisture, and cut water use. It cuts the use of chemical fertilizers, pesticides, and herbicides that contaminate soil and groundwater. It reduces weeds; increases plant growth, quality, and yield; and keeps paper and fish waste out of landfills. The cover is left in the soil as improved organic and nutrient content. This is not recycling. It is “upcycling” waste back into productive soil.

The humble abalone sits in the Pacific ocean and in seawater and creates an inner lining immediately next to its body that is twice as strong as the best ceramics that humans can make using very high temperature kilns. The overlapping brick-like structure of the seashell makes it very hard to crack, protecting the abalone from sea otters and the like. Dr. Jeffrey Brinker's research group at Sandia Labs found out that the iridescent moth

