"I can't understand why people are frightened of new ideas. I'm frightened of the old ones." John Cage, American philosopher, composer, poet.

A sustainable future for textiles

By Rosie O'Reilly



Now that we are into the twenty-first century it is clear that we have designed ourselves into great environmental and social difficulty. We have drawn our own blueprint for the destruction of ecosystems and misuse of resources. Be it leadership in commerce or chemistry, the inability to design outside of a linear 'beginning and end' framework has led us to social and environmental instability. A knew language of change must be spoken which moves us forward using the principles of natural systems which are adaptive and self-organising.

This language of change is beginning to be heard across the globe; knowledge- and information-sharing is building new connections between people and the world we live in. Open source has gained momentum and Wikipedia is a stopping shop for information shoppers and editors. Small groups of 'new creatives' are recognizing that the success of the community depends on the success of each one of its members and that we must create a system in which we begin to lead each other if we are to design our way out of the problems we face.

These creatives are, it seems, beginning to overcome our habits of mind and are seeing again the relationship between environmental, economic and social problems. The spirit of cycles, something entrenched in the minds of our ancestors is being reopened and we are alive again. The following paragraphs aim to convey a new thinking, which is being felt with greater intensity all over the world, from small eco-villages in Ireland to the regrowth of prairies using the principles of biomimicry in the US. This thinking when examined explains to us the new meaning of sustainability in the twenty-first century.

In Charlottesville, Virginia, an architect and a chemist work together to spin industry on its head with their talk of 'cradle to cradle' production methods and 'closed-loop systems'. The result is a furnishing fabric that is so ecologically sound its trimmings can be used as garden mulch in local community gardens but yet is proving to be a strong market player. On the other side of the globe the Satya-Jyoti Trust works from an organic farm to produce clothes that are made by local co-operatives and whose income supports the rehabilitation of marginalized rural woman. Both examples illustrate sustainable textiles in twenty-first century, but when did the term sustainable development immerge as a paradigm to aspire to, and on what was it based?

It started as a term that reflected the disbelieve that our industrial system of "heat, beat and treat" had shifted us into a position were we no longer were in tune with our habitat, the recognition that we were jeopardizing the lives of future generations brought the idea of sustainable development to the fore. At the end of the twentieth century the Aral Sea in Central Asia was a body of water 15% the size of what it had once been. Drained to irrigate the cotton

fields cultivated around it, it shrivelled and with it died a community's fishing industry and the natural habitat that had existed there for the thousands of years before human activity interfered. Biodiversity was now threatened by cash crops and monocultures and our reliance on fossil fuels was increasing levels of imbalance in the ecosystem that had not been experienced before. But amidst this destruction grew the roots of change, new models are now pushing us to redefine sustainability and continue to develop cyclical models and think of life cycles before all else?

One model is to follow the many biomimics out there who are now using nature as the innovator and the inspiration. The principles of biomimicry are simple; use nature as a model and as a mentor. Biomimicry tell the amazing 'Them and Us' story about the human relationship with the natural world. It tells the story of nature's ability to weave fibres that compared gramme for gramme with steel are five times stronger, create adhesives that can work in moist conditions and that stick to almost anything, of life-friendly manufacturing processes that are neither destructive nor wasteful and of their ability to self assemble products in perfect harmony with the system they work within. In a lab in Seattle, Tiny a golden orb spider lies on her back while being silked. This eight-legged factory turns liquid protein contained in a gland in her abdomen into an insoluble, nearly waterproof, highly ordered fabric.

The stark difference between the production of manmade fibres and Tiny's method is even more evident when we compare its production to the fibre used in bulletproof vests, Kevlar. Kevlar is produced by draining oil from the earth's crust and boiling it to several hundred degrees in order to force it into form. Tiny's factory takes in crickets at one end and produces a fibre that is tougher than Kevlar at the other and all at room temperature. It's enough to make any textile producer jealous—nature as our mentor and model shows us the pathway to more sustainable textile production.

Nature as a model is used again by Michael Braungart and William McDonagh, the founders of Cradle to Cradle as they tackle design issues on a global business level. Their design paradigm, eco-effectiveness is built on the idea that nothing exceeds the effectiveness of the earth's natural cycles. In consultancy with some of the biggest global brands they use the effectiveness of a single tree working as a perfect system to illustrate the effectiveness of natural systems it "makes food from the sun, sequesters carbon, creates oxygen, filters water, blossoms each year, and bears fruit". Even in death the tree contributes to a cycle it once grew from, depositing minerals as it decays. Using the design paradigm of life cycle thinking they help fabric manufacturers design materials that can work as part of a natural cycle and close the link between the raw materials and the waste created. Working with Design Tex and the Swiss textile mill, Rohner, they developed an upholstery fabric that works with the biological system—a product so safe you could literally eat it.



The Aral Sea, in 2003, had shrunk to well under half of the area it had covered fifty years before.
NASA

In conclusion, I am excited. The possibilities are endless and the future of sustainable textiles definitely bright. Mavericks from one side of the globe to another are offering us models of production and new ideas that are reconnecting us with the natural cycles we once knew. The very fact that we are starting to look to nature for innovation and inspiration is in many ways proof that we are taking the natural step towards a more sustainable textile industry.

Rosie O'Reilly is a recent graduate of Trinity College, Dublin, O'Reilly and a part-time worker at the Irish capital's Cultivate Centre, a "sustainable living and learning centre" that aims to promote 'healthy, balanced and creative cultural change" in the way people live. She submitted this essay to a competition run by the RITE Group in the build-up to its conference in London at the end of last year (with sponsorship from the Society of Dyers and Colourists) and won the 'international prize'.

References

1. *Madron, R. and Jopling, J. Gaian Democracies. 2003. Green Books. Bristol.*
2. *Benyus, J. Biomimicry. 1997. HarperCollins. New York*