

Angels in the Details by Greg Watson

The following is a review of *Healing Earth: An Ecologist's Journey of Innovation and Environmental Stewardship* by John Todd, published by North Atlantic Books (January 2019)

Water is the ultimate systems challenge. It is a unique resource that underpins all drivers of growth – be it agricultural production, energy generation, industry or manufacturing. It also connects these sectors into a broader economic system that must balance social development and environmental interests.

World Economic Forum Global Water Initiative

Not quite three-quarters of the way through *Healing Earth: An Ecologist's Journey of Innovation and Environmental Stewardship*, author John Todd describes an encouraging development following the deployment of his ecological restorer technology he hoped would clean up the polluted and “comatose” Flax Pond on Cape Cod:

Within weeks it began to “wake up” and the chemistry of the pond began to change.

Fisherville Mill Canal Restorer, Grafton, MA

Healing Earth is, in essence, a wake-up call, but not the kind we're used to these days. It is not another alarmist, do-or-die environmental ultimatum that I fear has regrettably become all too common, succeeding primarily in inspiring paralysis rather than action. Instead, Todd has presented us with a highly accessible manual that has already resulted in boots-in-the mud solutions to extremely fouled waters around the world. His eco-machines provide powerful examples of how to address serious environmental problems in ways that effectively address inequality – and in fact enhance the wealth of economically disadvantaged and/or exploited communities. Real wealth, as Buckminster Fuller reminded us, is “the technological ability to protect, nurture and support the needs of life.” That pretty much sums up what you will learn about in this truly empowering and readable volume.

“To Restore the Lands, Protect the Seas, and Inform the Earth's Stewards.” That was the mission of the New Alchemy Institute, an ecological-design think/do tank that Todd founded with his wife Nancy Jack Todd and fellow biologist Bill McLarney back in the socially and politically turbulent 1970s. Established on a 12-acre former Cape Cod dairy farm, New Alchemy was an incubator for developing sustainable, home-and-community-scaled technologies that focused on environmentally sound approaches to meet society's food, energy and shelter needs and were based on Nature's regenerative design strategy that optimizes life support with the minimum expenditure of time, energy and resources.

There were those who cynically viewed the Institute as a politically correct oasis where privileged, white do-gooders could dupe themselves and others into believing that they were saving the world while the real world was imploding under the weight of an ill-advised war and the ongoing struggles of African Americans to achieve equality and economic equity. It was, in other words, one of the very last places that any self-respecting, socially conscious black man would commit himself to.

I had a different take since I was in the midst of a personal quest to reconcile the apparently conflicting goals of racial equality and environmental quality. I had read E. F. Schumacher's *Small is Beautiful: Economics as if People Mattered* and Buckminster Fuller's *Operating Manual For Spaceship Earth*, both of which espoused the virtues of "appropriate technologies" as a way out of this dilemma. New Alchemy was among a handful of places in the country that was actually developing such technologies. In 1980 I responded to New Alchemy's first-ever job posting and ended up spending a total of four years there, first as education director and subsequently as its executive director. Following my tenure there, I did a number of tours of duty in state government as both a policymaker and advisor to policymakers in agencies devoted to the environment, economics, agriculture and energy. I was emboldened by my knowledge of the technology options that existed, thanks to my hands-on experiences at the Institute. I was able to generate interest and gain support for sustainable agriculture and renewable energy issues because I was perceived as an informed (if somewhat idealistic) advocate and not as an ideologically driven zealot (a seasoned elected official once warned me that most politicians are frightened by passion).

Ocean Arks Research Facility.

John Todd is one of my mentors, responsible for instilling that self-confidence within me. Armed with a PhD in marine biology, he discovered that Nature has already developed and tested the necessary designs that can and should form the basis for human life-support systems. His *modus operandi* has been to partner with Nature to design, build and demonstrate humanity's options for a green and equitable future. It all began at New Alchemy, and in recent years he has focused on restoring the planet's polluted waters.

That is good news for Planet Earth and all of her inhabitants.

Unlike many books that list solutions for dealing with the environmental ills whose details harbor those devils related to implementation, the further one delves into the workings of Todd's ecologically based technologies together with his illuminating case studies of early adopters that he provides, the more practical, implementable and truly empowering they become as they reveal what I call synergistic angels – elegant amalgams of local resources creatively assembled to produce results unforeseen when assessing each resource individually.

Todd is a gifted writer and storyteller. He writes at a level of detail for practitioners (designers, municipal and town administrators, water quality engineers, etc.) in order to determine if this approach might meet their needs without frustrating readers who may not require that degree of specificity. Designers and researchers can learn what specific organisms and ecosystems Todd and his colleagues consider critical to restoring the health of polluted waters and why. Sustainable development advocates and curious lay

readers will benefit from exposure to the thought process he has developed for determining his eco-concoctions – even if they don't feel they have to know the difference between kelp forest and algal turf. Todd has developed an uncanny ability to know just how much advance prep he needs to do before he turns his systems over to his faith in Nature to work her magic, which is beyond his total comprehension. All who embark upon the journey will marvel at his ability to scan natural and social landscapes to distill the essence of the design challenges and to inventory the natural and cultural resources available to address them.

Illustration by Matt Beam.

A water purification project in South Africa proved especially challenging. Not only were resources extremely scarce:

. . . I knew that a different type of infrastructure was needed here. It had to substitute information for costly hardware and biological design, for machines, pumps, valves and all the other paraphernalia of conventional water management and treatment.

Threats of vandalism – scavengers searching for any kinds of materials to sell on the black market – posed a real challenge. Todd's solution is brilliant and insightful: he decided that the system would have to be made invisible. You'll have to read the book to find out how he accomplished that.

John Todd's work greening Appalachian landscapes ravaged by coal mining practices – from conventional to mountaintop removal – provides the opportunity for him to muse on the way comprehensive biological restoration strategies can become the catalyst for a design revolution ushering in systemic change, perhaps as part of a new Green Deal that is being floated by some of the newly elected members of Congress who rode in on the blue wave. He envisions the adoption of progressive concepts, policies and tools such as the commons, community land trusts, cooperatives, local currencies, etc. That could have the effect of facilitating the widespread deployment of eco-machines and other sustainable strategies – such as grassland and soil restoration, permaculture, renewable energy, sustainable rural and urban agriculture – that in turn energize local economies while minimizing greenhouse gas emissions and even sequestering carbon from the atmosphere.

Baima Canal Eco-machine, Fuzhou, China.

By the time I arrived at the final chapter, in which Todd puts forth a strategy to “green” the Sinai, there was no doubt in my mind that such a goal is clearly within reach. In fact, his proposal is a literal walk in the desert.

A final observation on how these exciting innovations relate to the issue of equity. Although Todd never addresses it directly, it is clear that one of the most appealing aspects of his gestalt is its potential for redistributing real wealth. I am speaking here of wealth in the form of know-how and in the application of that know-how to improve the quality of life and the self-esteem of residents living in disenfranchised communities who have been the recipients of a shamefully long list of environmental injustices for far too long.

That is the latent power of Healing Earth. It is a bold vision that these dangerously chaotic times demand and our children and grandchildren deserve. Buckminster Fuller said “the best way to predict the future is to create it.” Healing Earth offers a vision of a

world where the waters everywhere have been restored to health and are able to support a world that works for everyone.