References and annotated bibliography


Biomimicry is a revolutionary new science that analyzes nature's best ideas -- spider silk and prairie grass, seashells and brain cells -- and adapts them for human use. Science writer and lecturer Janine Benyus takes us into the lab and out in the field with the maverick researchers who are applying nature's ingenious solutions to the problem of human survival: stirring vats of proteins to unleash their signaling power in computers; analyzing how spiders manufacture a waterproof fiber five times stronger than steel; studying how electrons in a leaf cell convert sunlight to fuel in trillionths of a second; discovering miracle drugs by observing what animals eat -- and much more. The products of biomimicry are things we can all use -- medicines, "smart" computers, super-strong materials, profitable and earth-friendly business. Biomimicry eloquently shows that the answers are all around us.


Charts the present and future of higher education and the sustainability agenda. International in scope, the contributors are distinguished academics and active researchers from the UK, the US and Australia. This book is essential reading for academics, policy-makers in higher education, higher education authorities, students, and those working in sustainable development sectors. It is embraced by some individuals and departments and perceived by others as a threat to the coherence of particular disciplines. It is not a subject in its own right although there are signs that this shift in consciousness is happening. This book analyzes the impact of the concepts and practices of sustainability and sustainable development within various academic disciplines, institutional practices, fields of study and methods of inquiry. The authors examine the purpose of the modern university and the nature of sustainable education. They explore links to social movements in sustainability, approaches to environmental management, new pedagogies, sustainability projects, curriculum change, culture and biodiversity, values relating to gender equality, global responsibility, and case studies that deal with sustainability in specific disciplines.

Keywords: sustainability, higher education, sustainability curriculum, policy makers, sustainable development, livelihood, biodiversity


First published by Houghton Mifflin in 1962, *Silent Spring* alerted a large audience to the environmental and human dangers of indiscriminate use of pesticides, spurring revolutionary changes in the laws affecting our air, land, and water. "Silent Spring became a runaway bestseller, with international reverberations . . . <It is> well crafted, fearless and succinct . . . Even if she had not inspired a generation of activists, Carson would prevail as one of the greatest nature writers in American letters" (Peter Matthiessen, for Time's 100 Most Influential People of the Century). This fortieth anniversary edition celebrates Rachel Carson's watershed book with a new introduction by the author and activist Terry Tempest Williams and a new afterword by the
acclaimed Rachel Carson biographer Linda Lear, who tells the story of Carson’s courageous defense of her truths in the face of ruthless assault from the chemical industry in the year following the publication of Silent Spring and before her


An introduction to the effects of behavior on the environment and how changing behaviors can bring about improvement. Cone and Hayes discuss the 'technology' and tactics of behavior change with reference to environmental problems. Among the specific areas treated are environmental aesthetics and litter, noise pollution, population control, recycling, residential energy, and water conservation. Exercises and a glossary will facilitate active use of the book by environmental problem solvers.

Keywords: environmental problems, behavior change, sustainability, environmentalism


Green Manufacturing: Fundamentals and Applications introduces the basic definitions and issues surrounding green manufacturing at the process, machine and system (including supply chain) levels. It also shows, by way of several examples from different industry sectors, the potential for substantial improvement and the paths to achieve the improvement. Additionally, this book discusses regulatory and government motivations for green manufacturing and outlines the path for making manufacturing more green as well as making production more sustainable.

Keywords: alternative energy, constraints and issues, fundamentals and applications, green manufacturing, metrics and analytical tools, regulatory and government motivations, supply chain, sustainable production, energy technology, environmental engineering and physics, production & process engineering, sustainable development


Call it “Zen and the Art of Farming” or a “Little Green Book,” Masanobu Fukuoka’s manifesto about farming, eating, and the limits of human knowledge presents a radical challenge to the global systems we rely on for our food. At the same time, it is a spiritual memoir of a man whose innovative system of cultivating the earth reflects a deep faith in the wholeness and balance of the natural world. As Wendell Berry writes in his preface, the book “is valuable to us because it is at once practical and philosophical. It is an inspiring, necessary book about agriculture because it is not just about agriculture.” Trained as a scientist, Fukuoka rejected both modern agribusiness and centuries of agricultural practice, deciding instead that the best forms of cultivation mirror nature’s own laws. Over the next three decades he perfected his so-called “do-nothing” technique: commonsense, sustainable practices that all but eliminate the use of pesticides, fertilizer, tillage, and perhaps most significantly, wasteful effort. Whether you’re a guerrilla gardener or a kitchen gardener, dedicated to slow food or simply looking to live a healthier life, you will find something here—you may even be moved to start a revolution of your own.

One of the world’s most influential environmentalists reveals a worldwide grassroots movement of hope and humanity. Blessed Unrest tells the story of a worldwide movement that is largely unseen by politicians or the media. Hawken, an environmentalist and author, has spent more than a decade researching organizations dedicated to restoring the environment and fostering social justice. From billion-dollar nonprofits to single-person causes, these organizations collectively comprise the largest movement on earth. This is a movement that has no name, leader, or location, but is in every city, town, and culture. It is organizing from the bottom up and is emerging as an extraordinary and creative expression of people’s needs worldwide. Blessed Unrest explores the diversity of this movement, its brilliant ideas, innovative strategies, and centuries-old history. The culmination of Hawken’s many years of leadership in these fields, it will inspire, surprise, and delight anyone who is worried about the direction the modern world is headed. Blessed Unrest is a description of humanity’s collective genius and the unstoppable movement to re-imagine our relationship to the environment and one another. Like Hawken’s previous books, Blessed Unrest will become a classic in its field—a touchstone for anyone concerned about our future.


The world has changed in the seventeen years since the controversial initial publication of Paul Hawken's Ecology of Commerce, a stirring treatise about the perceived antagonism between ecology and business. Yet Hawken's impassioned argument—that business both causes the most egregious abuses of the environment and, crucially, holds the most potential for solving our sustainability problems—is more relevant and resonant than ever. Containing updated and revised material for a new audience, The Ecology of Commerce presents a compelling vision of the restorative (rather than destructive) economy we must create, centered on eight imperatives:

- Reduce energy carbon emissions 80 percent by 2030 and total natural resource usage 80 percent by 2050.
- Provide secure, stable, and meaningful employment to people everywhere.
- Be self-organizing rather than regulated or morally mandated.
- Honor market principles.
- Restore habitats, ecosystems, and societies to their optimum.
- Rely on current income.
- Be fun and engaging, and strive for an aesthetic outcome.


Most businesses still operate according to a world view that hasn't changed since the start of the Industrial Revolution. Then, natural resources were abundant and labor was the limiting factor of production. But now, there's a surplus of people, while natural capital natural resources and the ecological systems that provide vital life-support services is scarce and relatively expensive. In this groundbreaking blueprint for a new economy, three leading business visionaries explain how the world is on the verge of a new industrial revolution. Natural Capitalism describes a future in which business and environmental interests increasingly overlap, and in which companies can improve their bottom lines, help solve environmental problems and feel better about what they do all at the same time. Citing hundreds of compelling stories from a wide array of sectors, the book shows how to realize benefits both for today's shareholders and for future generations and how, by firing the unproductive tons, gallons, and kilowatt-hours it's possible to keep the people who will foster the
innovation that drives future improvement.


The twentieth century saw unprecedented growth in population, energy consumption, and food production. As the population shifted from rural to urban, the impact of humans on the environment increased dramatically. The twenty-first century ushered in an era of declines, in a number of crucial parameters: Global oil, natural gas, and coal extraction. Yearly grain harvests. Climate stability. Population Economic growth. Freshwater depletion. Minerals and ores, such as copper and platinum. To adapt to this profoundly different world, we must begin now to make radical changes to our attitudes, behaviors, and expectations. Peak Everything addresses many of the cultural, psychological, and practical changes we will have to make as nature rapidly dictates our new limits. This latest book from Richard Heinberg, author of three of the most important books on Peak Oil, touches on the most important aspects of the human condition at this unique moment in time. A combination of wry commentary and sober forecasting on subjects as diverse as farming and industrial design, this book tells how we might make the transition from the Age of Excess to the Era of Modesty with grace and satisfaction, while preserving the best of our collective achievements. A must-read for individuals, business leaders, and policymakers who are serious about effecting real change. Richard Heinberg is a journalist, lecturer, and the author of seven books, including The Party's Over, Powerdown, and The Oil Depletion Protocol. He is one of the world's foremost Peak Oil educators.


In the 20th century, cheap and abundant energy brought previously unimaginable advances in health, wealth, and technology, and fed an explosion in population and consumption. But this growth came at an incredible cost. Climate change, peak oil, freshwater depletion, species extinction, and a host of economic and social problems now challenge us as never before. The Post Carbon Reader features articles by some of the world's most provocative thinkers on the key drivers shaping this new century, from renewable energy and urban agriculture to social justice and systems resilience. This unprecedented collection takes a hard-nosed look at the interconnected threats of our global sustainability quandary—as well as the most promising responses. The Post Carbon Reader is a valuable resource for policymakers, college classrooms, and concerned citizens.

Keywords: peak oil, transition initiatives, sustainability, technology, consumption, urban agriculture, social movements, policy makers, Heinberg


The first edition of Gaia’s Garden, sparked the imagination of America’s home gardeners, introducing permaculture’s central message: Working with Nature, not against her, results in more beautiful, abundant, and forgiving gardens. This extensively revised and expanded second edition broadens the reach and depth of the permaculture approach for urban and suburban growers. Many people mistakenly think that ecological gardening—which involves growing a wide range of edible and other useful plants—can take place only on a large, multiacre scale. As Hemenway demonstrates, it’s fun and easy to create a “backyard ecosystem” by assembling communities of plants that can work cooperatively and perform a variety of functions, including: Building and maintaining soil fertility and structure. Catching and conserving water in the landscape. Providing habitat for beneficial insects,
birds, and animals. Growing an edible “forest” that yields seasonal fruits, nuts, and other foods. This revised and updated edition also features a new chapter on urban permaculture, designed especially for people in cities and suburbs who have very limited growing space. Whatever size yard or garden you have to work with, you can apply basic permaculture principles to make it more diverse, more natural, more productive, and more beautiful. Best of all, once it’s established, an ecological garden will reduce or eliminate most of the backbreaking work that’s needed to maintain the typical lawn and garden.

Keywords: permaculture, agriculture, sustainability, gardening, perennials, food forest, ecological, urban permaculture


David Holmgren brings into sharper focus the powerful and still evolving Permaculture concept he pioneered with Bill Mollison in the 1970s. It draws together and integrates 25 years of thinking and teaching to reveal a whole new way of understanding and action behind a simple set of design principles. The 12 design principles are each represented by a positive action statement, an icon and a traditional proverb or two that captures the essence of each principle. Holmgren draws a correlation between every aspect of how we organize our lives, communities and landscapes and our ability to creatively adapt to the ecological realities that shape human destiny. For students and teachers of Permaculture this book provides something more fundamental and distilled than Mollison's encyclopedic Designers Manual. For the general reader it provides refreshing perspectives on a range of environmental issues and shows how permaculture is much more than just a system of gardening. For anyone seriously interested in understanding the foundations of sustainable design and culture, this book is essential reading. Although a book of ideas, the big picture is repeatedly grounded by reference to Holmgren's own place, Melliodora, and other practical examples.

Keywords: permaculture, resilience, sustainability,


This book is likely the most widely used text for people who are interested and involved in Transition Town Initiatives. We live in an oil-dependent world, arriving at this level of dependency in a very short space of time by treating petroleum as if it were in infinite supply. Most of us avoid thinking about what happens when oil runs out (or becomes prohibitively expensive), but The Transition Handbook shows how the inevitable and profound changes ahead can have a positive outcome. These changes can lead to the rebirth of local communities that will grow more of their own food, generate their own power, and build their own houses using local materials. They can also encourage the development of local currencies to keep money in the local area. There are now over 30 “transition towns” in the UK, Australia and New Zealand with more joining as the idea takes off. They provide valuable experience and lessons-learned for those of us on this side of the Atlantic. With little proactive thinking at the governmental level, communities are taking matters into their own hands and acting locally. If your town is not a transition town, this upbeat guide offers you the tools for starting the process.

Keywords: sustainability, transition, transition towns, Totnes, resilience, peak natural resources, community building, time banks

This book seeks to answer the question: "What would it look like if the best responses to peak oil and climate change came not from committees and Acts of Parliament, but from you and me, and the people around us?" For the first Transition Handbook, published in 2008, this was pretty much a speculative question, but with this new book we are able to draw from what has, in effect, been a four-year worldwide experiment, and attempt to try to put the Transition idea into practice. This book is a move away from The Twelve Steps of Transition that underpinned the work of Transition initiatives up to this point toward a more holistic, more appropriate model. It imagines the work involved in transforming the place you live from its current highly vulnerable, unresilient, oil-dependent state to a resilient, more localized, diverse, and nourishing place, as a journey. With this book, the author has created a highly useful companion on the journey toward community resilience. It is rich with stories of ordinary people doing extraordinary things, of tried and tested tools, and offers many of the ingredients you may find you need to create this process where you live. The way it has been created embodies this sense of collaboration and creativity. Each of the tools and ingredients was written in draft and posted to the author’s blog, TransitionCulture.org, as well as on the Transition Network’s site. Comments and feedback were invited. Transition initiatives around the world were invited to send in their stories and photos, which abound in this book.


*Edible Forest Gardens* is a groundbreaking two-volume work that spells out and explores the key concepts of forest ecology and applies them to the needs of natural gardeners in temperate climates. Volume I lays out the vision of the forest garden and explains the basic ecological principles that make it work. In Volume II, Dave Jacke and Eric Toensmeier move on to practical considerations: concrete ways to design, establish, and maintain your own forest garden. Along the way they present case studies and examples, as well as tables, illustrations, and a uniquely valuable "plant matrix" that lists hundreds of the best edible and useful species. Taken together, the two volumes of *Edible Forest Gardens* offer an advanced course in ecological gardening--one that will forever change the way you look at plants and your environment.


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Student and employer demand, high-level institutional commitment, and faculty interest are inspiring the integration of sustainability-oriented themes into higher education curricula and research agendas. Moving toward sustainability calls for shifts in practice such as interdisciplinary collaboration and partnerships for engaged learning. This timely edited collection provides a glimpse at the ways...
colleges and universities have integrated sustainability across the curriculum. The research-based chapters provide empirical studies of both traditional and innovative degree programs as well as case studies from professional schools. Chapter authors illustrate some of the inclusive and deliberative community and political processes that can lead to sustainable learning outcomes in higher education. Exploring the range of approaches campuses are making to successfully integrate sustainability into the curricula, this much-needed resource provides inspiration, guidance, and instruction for others seeking to take education for sustainability to the next level.

Keywords: higher education, sustainability, curriculum, research, learning strategies


First published in 1949 and praised in The New York Times Book Review as "a trenchant book, full of vigor and bite," *A Sand County Almanac* combines some of the finest nature writing since Thoreau with an outspoken and highly ethical regard for America's relationship to the land. Written with an unparalleled understanding of the ways of nature, the book includes a section on the monthly changes of the Wisconsin countryside; another part that gathers informal pieces written by Leopold over a forty-year period as he traveled through the woodlands of Wisconsin, Iowa, Arizona, Sonora, Oregon, Manitoba, and elsewhere; and a final section in which Leopold addresses the philosophical issues involved in wildlife conservation. As the forerunner of such important books as Annie Dillard's Pilgrim at Tinker Creek, Edward Abbey's Desert Solitaire, and Robert Finch's The Primal Place, this classic work remains as relevant today as it was forty years ago.


A manifesto for a radically different philosophy and practice of manufacture and environmentalism "Reduce, reuse, recycle" urge environmentalists; in other words, do more with less in order to minimize damage. As William McDonough and Michael Braungart argue in their provocative, visionary book, however, this approach perpetuates a one-way, "cradle to grave" manufacturing model that dates to the Industrial Revolution and casts off as much as 90 percent of the materials it uses as waste, much of it toxic. Why not challenge the notion that human industry must inevitably damage the natural world, they ask. In fact, why not take nature itself as our model? A tree produces thousands of blossoms in order to create another tree, yet we do not consider its abundance wasteful but safe, beautiful, and highly effective; hence, "waste equals food" is the first principle the book sets forth. Products might be designed so that, after their useful life, they provide nourishment for something new—either as "biological nutrients" that safely re-enter the environment or as "technical nutrients" that circulate within closed-loop industrial cycles, without being "downcycled" into low-grade uses (as most "recyclables" now are). Elaborating their principles from experience (re)designing everything from carpeting to corporate campuses, the authors make an exciting and viable case for change.


"The bestselling author of The End of Nature issues an impassioned call to arms for an economy that creates community and ennobles our lives. In this powerful and provocative manifesto, Bill McKibben offers the biggest challenge in a generation to the prevailing view of our economy. For the first time in human history, he observes, "more" is no longer synonymous with "better"—indeed, for
many of us, they have become almost opposites. McKibben puts forward a new way to think about the things we buy, the food we eat, the energy we use, and the money that pays for it all. Our purchases, he says, need not be at odds with the things we truly value. McKibben's animating idea is that we need to move beyond "growth" as the paramount economic ideal and pursue prosperity in a more local direction, with cities, suburbs, and regions producing more of their own food, generating more of their own energy, and even creating more of their own culture and entertainment. He shows this concept blossoming around the world with striking results, from the burgeoning economies of India and China to the more mature societies of Europe and New England. For those who worry about environmental threats, he offers a route out of the worst of those problems; for those who wonder if there isn't something more to life than buying, he provides the insight to think about one's life as an individual and as a member of a larger community. McKibben offers a realistic, if challenging, scenario for a hopeful future. As he so eloquently shows, the more we nurture the essential humanity of our economy, the more we will recapture our own.


In 1972, three scientists from MIT created a computer model that analyzed global resource consumption and production. Their results shocked the world and created stirring conversation about global 'overshoot,' or resource use beyond the carrying capacity of the planet. Now, preeminent environmental scientists Donella Meadows, Jorgen Randers, and Dennis Meadows have teamed up again to update and expand their original findings in *The Limits to Growth: The 30 Year Global Update*. Meadows, Randers, and Meadows are international environmental leaders recognized for their groundbreaking research into early signs of wear on the planet. Citing climate change as the most tangible example of our current overshoot, the scientists now provide us with an updated scenario and a plan to reduce our needs to meet the carrying capacity of the planet. Over the past three decades, population growth and global warming have forged on with a striking semblance to the scenarios laid out by the World3 computer model in the original *Limits to Growth*. While Meadows, Randers, and Meadows do not make a practice of predicting future environmental degradation, they offer an analysis of present and future trends in resource use, and assess a variety of possible outcomes. In many ways, the message contained in *Limits to Growth: The 30-Year Update* is a warning. Overshoot cannot be sustained without collapse. But, as the authors are careful to point out, there is reason to believe that humanity can still reverse some of its damage to Earth if it takes appropriate measures to reduce inefficiency and waste. Written in refreshingly accessible prose, *Limits to Growth: The 30-Year Update* is a long anticipated revival of some of the original voices in the growing chorus of sustainability. *Limits to Growth: The 30 Year Update* is a work of stunning intelligence that will expose for humanity the hazy but critical line between human growth and human development.


Permaculture (permanent agriculture) is the conscious design and maintenance of agriculturally productive ecosystems which have the diversity, stability, and resilience of natural ecosystems. It is the harmonious integration of landscape and people providing their food, energy, shelter, and other material and non-material needs in a sustainable way. Without permanent agriculture there is no possibility of a stable social order.

Permaculture design is a system of assembling conceptual, material, and strategic components in a pattern which functions to benefit life in all its forms.

The philosophy behind permaculture is one of working with, rather than against, nature; of protracted and thoughtful observation rather than protracted and thoughtless action; of looking at systems in all
their functions rather than asking only one yield of them; and of allowing systems to demonstrate their own evolutions.


Permaculture is about designing sustainable human settlements. It is a philosophy and approach to land use which weaves together microclimate, annual and perennial plants, animals, soils, water management, and human needs into intricately connected, productive communities. Topics in this book include: Energy-efficient site analysis, planning & design methods. House placement & design for temperate, dryland & tropical regions. Urban permaculture: garden layouts, land access & community funding systems. Using fences, trellis, greenhouse & shadehouse to best effect. Chicken & pig forage systems; tree crops & pasture integration for stock. Orchards & home woodlots for temperate, arid & tropical climates. How to influence microclimate around the house & garden. Large section on selected plant species lists, with climatic tolerances, heights & uses.


The environmental movement has often been accused of being overly negative--trying to stop "progress." The Nature of Design, on the other hand, is about starting things, specifically an ecological design revolution that changes how we provide food, shelter, energy, materials, and livelihood, and how we deal with waste. Ecological design is an emerging field that aims to recalibrate what humans do in the world according to how the world works as a biophysical system. Design in this sense is a large concept having to do as much with politics and ethics as with buildings and technology. The book begins by describing the scope of design, comparing it to the Enlightenment of the 18th century. Subsequent chapters describe barriers to a design revolution inherent in our misuse of language, the clockspeed of technological society, and shortsighted politics. Orr goes on to describe the critical role educational institutions might play in fostering design intelligence and what he calls "a higher order of heroism." Appropriately, the book ends on themes of charity, wilderness, and the rights of children. Astute yet broadly appealing, The Nature of Design combines theory, practicality, and a call to action.


Our efforts to build a sustainable world cannot succeed unless future generations learn how to partner with natural systems to our mutual benefit. In other words, children must become "ecologically literate." The concept of ecological literacy advanced by this book’s creators, the Center for Eco-literacy in Berkeley, California, goes beyond the discipline of environmental education. It aims, says David Orr in his foreword, “toward a deeper transformation of the substance, process, and scope of education at all levels”—familial, geographic, ecological, and political. The reports and essays gathered here reveal the remarkable work being done by the Center’s network of partners. In one middle school, for example, culinary icon Alice Waters founded a program that not only gives students healthy meals but teaches them to garden—and thus to study life cycles and energy flows. Other hands-on student projects described here range from stream restoration and watershed exploration to confronting environmental justice issues at the neighborhood level. With contributions
from distinguished writers and educators, such as Fritjof Capra, Wendell Berry, and Michael
Ableman, Ecological Literacy reflects the best thinking about how the world actually works and how
learning occurs. Parents and educators everywhere will find it an invaluable resource.

Keywords: education, sustainability, higher education, eco-literacy, environmental determinism,
environmental education, leadership, David Orr


In *Earth in Mind,* noted environmental educator David W. Orr focuses not on problems in education,
but on the problem of education. Much of what has gone wrong with the world, he argues, is the
result of inadequate and misdirected education that: alienates us from life in the name of human
domination causes students to worry about how to make a living before they know who they are
overemphasizes success and careers separates feeling from intellect and the practical from the
theoretical deadens the sense of wonder for the created world The crisis we face, Orr explains, is one
of mind, perception, and values. It is, first and foremost, an educational challenge. The author begins
by establishing the grounds for a debate about education and knowledge. He describes the problems
of education from an ecological perspective, and challenges the "terrible simplifiers" who wish to
substitute numbers for values. He follows with a presentation of principles for re-creating education
in the broadest way possible, discussing topics such as biophilia, the disciplinary structure of
knowledge, the architecture of educational buildings, and the idea of ecological intelligence. Orr
concludes by presenting concrete proposals for reorganizing the curriculum to draw out our affinity
for life.


Newly updated, this timely history of the struggle to discover and control water in the American West
is a tale of rivers diverted and damned, political corruption and intrigue, billion-dollar battles over
water rights, and economic and ecological disaster. Winner of the National Book Critics Circle
Award.

Penguin Press

The bestselling author of *The Botany of Desire* explores the ecology of eating to unveil why we
consume what we consume in the twenty-first century "What should we have for dinner?" To one
degree or another this simple question assails any creature faced with a wide choice of things to eat.
Anthropologists call it the omnivore's dilemma. Choosing from among the countless potential foods
nature offers, humans have had to learn what is safe, and what isn't-which mushrooms should be
avoided, for example, and which berries we can enjoy. Today, as America confronts what can only be
described as a national eating disorder, the omnivore's dilemma has returned with an atavistic
vengeance. The cornucopia of the modern American supermarket and fast-food outlet has thrown us
back on a bewildering landscape where we once again have to worry about which of those tasty-
looking morsels might kill us. At the same time we're realizing that our food choices also have
profound implications for the health of our environment. The Omnivore's Dilemma is bestselling
author Michael Pollan's brilliant and eye-opening exploration of these little-known but vitally important dimensions of eating in America. Pollan has divided The Omnivore's Dilemma into three parts, one for each of the food chains that sustain us: industrialized food, alternative or "organic" food, and food people obtain by dint of their own hunting, gathering, or gardening. Pollan follows each food chain literally from the ground up to the table, emphasizing our dynamic co-evolutionary relationship with the species we depend on. He concludes each section by sitting down to a meal--at McDonald's, at home with his family sharing a dinner from Whole Foods, and in a revolutionary "beyond organic" farm in Virginia. For each meal he traces the provenance of everything consumed, revealing the hidden components we unwittingly ingest and explaining how our taste for particular foods reflects our environmental and biological inheritance. We are indeed what we eat and what we eat remakes the world. A society of voracious and increasingly confused omnivores, we are just beginning to recognize the profound consequences of the simplest everyday food choices, both for ourselves and for the natural world. The Omnivore's Dilemma is a long-overdue book and one that will become known for bringing a completely fresh perspective to a question as ordinary and yet momentous as What shall we have for dinner?

Keywords: Omnivore, agriculture, sustainable agriculture, anthropology, agri-business, consumerism, health policy, environmentalism, organic, life-cycle analysis, Michael Pollan


Henry David Thoreau's masterwork, Walden, is a collection of his reflections on life and society. This groundbreaking book has influenced generations of readers and continues to inspire and inform anyone with an open mind and a love of nature. Walden is one of the best-known non-fiction books ever written by an American. It details Thoreau's sojourn in a cabin near Walden Pond, amidst woodland owned by his friend and mentor Ralph Waldo Emerson. Walden was written with expressed seasonal divisions. Thoreau hoped to isolate himself from society in order to gain a more objective understanding of it. Simplicity and self-reliance were Thoreau's other goals, and the whole project was inspired by Transcendentalist philosophy. As pertinent and relevant today as it was when it was first written.


A penetrating, page-turning tour of a post-human Earth In The World Without Us, Alan Weisman offers an utterly original approach to questions of humanity’s impact on the planet: he asks us to envision our Earth, without us. In this far-reaching narrative, Weisman explains how our massive infrastructure would collapse and finally vanish without human presence; which everyday items may become immortalized as fossils; how copper pipes and wiring would be crushed into mere seams of reddish rock; why some of our earliest buildings might be the last architecture left; and how plastic, bronze sculpture, radio waves and some man-made molecules may be our most lasting gifts to the universe. The World Without Us reveals how, just days after humans disappear, floods in New York’s subways would start eroding the city’s foundations, and how, as the world’s cities crumble, asphalt jungles would give way to real ones. It describes the distinct ways that organic and chemically treated farms would revert to wild, how billions more birds would flourish and how cockroaches in unheated cities would perish without us. Drawing on the expertise of engineers, atmospheric scientists, art conservators, zoologists, oil refiners, marine biologists, astrophysicists, religious leaders from rabbis to the Dali Lama and paleontologists — who describe a pre-human world inhabited by mega-fauna like giant sloths that stood taller than mammoths — Weisman illustrates what the planet might be like
today, if not for us. From places already devoid of humans (a last fragment of primeval European forest; the Korean DMZ; Chernobyl), Weisman reveals Earth’s tremendous capacity for self-healing. As he shows which human devastations are indelible, and which examples of our highest art and culture would endure longest, Weisman’s narrative ultimately drives toward a radical but persuasive solution that needn't depend on our demise. It is narrative nonfiction at its finest, and in posing an irresistible concept with both gravity and a highly readable touch, it looks deeply at our effects on the planet in a way that no other book has. This book offers critical fodder for classroom discussions about the sustainability of our infrastructure and how our behaviors factor into the bigger equation of how our society can be perceived as merely a chapter in geologic history.

Keywords: Sustainability, resilience, engineering, nature, urban infrastructure, architecture, Weisman


The eastern savannas of war-ravaged Colombia, known as the llanos, are among the most brutal environments on Earth, an unlikely setting for one of the most hopeful environmental stories ever told. Here, more than twenty-five years ago, an intrepid visionary named Paolo Lugari set out to create a village that could sustain itself agriculturally, economically, and artistically. He reasoned that if a community could survive in the Colombian llanos, it would be possible to live anywhere. The new village was named after the graceful river terns common in the area, los gaviotas. The early inhabitants of Gaviotas soon realized that if they wanted even basic necessities, they would need to be very resourceful. So they invented wind turbines that convert mild breezes into energy, super-efficient pumps that tap previously inaccessible sources of water, and solar kettles that sterilize drinking water using the furious heat of the tropical sun. They even invented a rain forest! Two million pine trees planted as a renewable crop have unexpectedly allowed the rain forest to re-establish itself. Paolo Lugari and the Gaviotans, in their quest to create a model human habitat, serendipitously renewed an entire ecosystem. This is why Colombian author Gabriel Garcia Marquez has called Lugari as “The Inventor of the World.”


Hailed as "one of the most eminent environmental historians of the West" by Alan Brinkley in The New York Times Book Review, Donald Worster has been a leader in reshaping the study of American history. Winner of the prestigious Bancroft Prize for his book Dust Bowl, Worster has helped bring humanity's interaction with nature to the forefront of historical thinking. Now, in The Wealth of Nature, he offers a series of thoughtful, eloquent essays which lay out his views on environmental history, tying the study of the past to today's agenda for change. The Wealth of Nature captures the fruit of what Worster calls "my own intellectual turning to the land." History, he writes, represents a dialogue between humanity and nature—though it is usually reported as if it were simple dictation. Worster takes as his point of departure the approach expressed early on by Aldo Leopold, who stresses the importance of nature in determining human history; Leopold pointed out that the spread of bluegrass in Kentucky, for instance, created new pastures and fed the rush of American settlers across the Appalachians, which affected the contest between Britain, France, and the U.S. for control of the area. Worster's own work offers an even more subtly textured understanding, noting in this example, for instance, that bluegrass itself was an import from the Old
World which supplanted native vegetation—a form of "environmental imperialism." He ranges across such areas as agriculture, water development, and other questions, examining them as environmental issues, showing how they have affected—and continue to affect—human settlement. Environmental history, he argues, is not simply the history of rural and wilderness areas; cities clearly have a tremendous impact on the land, on which they depend for their existence. He argues for a comprehensive approach to understanding our past as well as our present in environmental terms. "Nostalgia runs all through this society," Worster writes, "fortunately, for it may be our only hope of salvation." These reflective and engaging essays capture the fascination of environmental history—and the beauty of nature lost or endangered—underscoring the importance of intelligent action in the present.


Engineering can be characterized as the exploration of potentials for useful applications. It is oriented towards solutions within a framework of limited resources. Education is needed to enable engineers to act as “change agents”. It is their responsibility to innovate in the development, manufacturing and marketing of products throughout their full life cycle, to fulfill the needs of humankind, protecting public health, welfare, and environment. Productivity of learning and teaching has to be increased by a new curriculum including innovative methods and forms of engineering education. This paper will analyze which competence domains a curriculum towards sustainable development should have and how the education in the international master study program “Global Production Engineering” is accomplished. The best practice from Germany can be a pioneer for other countries in the world that target to construct a knowledge-based economy like the United Arab emirates. The paper shows possibilities of a master program to motivate students with bachelor degrees and initial work experience to walk paths in their careers combining professional success and global responsibility.

Keywords: engineering education, sustainability, curriculum, global production engineering, environmental, development, agricultural economics, production and process engineering, renewable energy, green energy sustainable development

**Articles:**


Grant, L. (2011). In response: Can we consume our way out of climate change? A call for analysis. The Behavior Analyst, 34, 245–266 No. 2 (Fall)

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