I don’t know exactly when I decided—probably about 1991 during the disenchanted activities of Earth Day at Berkeley—that I had survived the Apocalypse. It was such a relief. I had been waiting since my youth in the 1950s for the promised destruction of the planet, first by nuclear warfare, next by pesticides, and then a rapid succession of man-made Armageddons that would quicken the processes of entropy and unleash the ultimate paroxysmal heat death. The chances, however, that environmental damage could be significantly reversed, that the realm of sustainability could be effectively installed, that nature could be regenerated, in short that the world could be saved, no longer seemed quite so strong, if the Apocalypse had already occurred. Yes, life will continue, nature is still present, the sex drive too, but I became aware that during the late 20th century, as we inadvertently consumed trace elements from Chernobyl and gained ultraviolet exposure through the gaping ozone hole(s), that something definitely had come to an end, not biologically but cosmologically. We could no longer struggle against impending doom if it had already occurred. From that moment on, my ecological consciousness ceased to be a narrative steeped in guilt, and became merely a question of maintaining dignity during an inevitable decline.

This does not mean that I have stopped recycling or disconnected my photovoltaic roof or stopped teaching about environmental responsibility. It is simply a shift in worldview, from one that paralleled the Christian eschatology of guilt for sins and fear of doom, to one of therapeutic resignation. In this tranquility I would like to approach some of the latest texts that might interest design professionals concerned about the environment. While I agree that a lot can and must be done to reduce the production of greenhouse gases, it seems to me that how this is to be done is the compelling issue. Environmentalism has already claimed a significant role in politics (does anyone remember Ralph Nader?), yet the politics of environmentalism is virtually ignored by its architect proselytizers, who either assume that green technology will solve the prob-
problems through laissez faire mechanisms or that some pervasive change of heart, some mass eco-fascism, will rise up and enforce it for everyone’s own good.

Almost everything I have read on ecology and design is an imperative, exhortatory tract. I can think of no other discourse quite so steeped political correctness. With varying degrees of historical and scientific evidence, the texts appeal to a consensus that a severe environmental crisis is significantly increasing because of architectural and urban practices. *Sustainable Architecture White Papers*, produced by the Earth Pledge Foundation, can serve as a well-meaning example: fifty pep talks by leading environmentalist pamphleeters and practitioners, who in four- to six-page mission statements either provide an ideological catechism or describe their positive experiences in sustainable design. Their practical concerns range from photovoltaics to green roofs to more arcane subjects such as fat, oil, and grease “remediators” for kitchen wastes. That such a collection can do much to convince the unconvinced is doubtful, and, for the already convinced, aside from promotional exposure for those working in the field, it will only serve as a hearty pat on the back. In vaguely utopian terms, most contributors outline what can be done with sustainable technologies, showing little consideration for the limits of the political system. The common conclusion that a “sustainable” architecture—one that supplies its own water and energy needs, takes care of its own waste, adapts to site and climate, and promotes health—will also be more beautiful has rarely been supported by evidence.

But what if the growing consensus on imminent environmental catastrophe is wrong? Probably the most controversial book of the moment, *The Skeptical Environmentalist: Measuring the Real State of the World*, by Bjørn Lomborg, sets out to debunk “the litany” of doomsday-ism at the core of the ecology movement. A Danish statistician, Lomborg methodically argues that the projections made by Worldwatch Institute, World Wildlife Fund, Greenpeace, and other prime sources for describing environmental imbalance are significantly in error in their presentations of diminishing natural resources, health problems, reduced biodiversity, overpopulation, and poverty. Within the safety of the liberal tradition, Lomborg theorizes in cost-benefits terms that during the past century “mankind’s lot has actually improved in terms of practically every measurable indicator” (4). Obviously his conclusions about the ineffectiveness of the Kyoto Accords in addressing greenhouse gases has been taken very seriously by the Bush administration: while agreeing that global warming is partly anthropogenic, he reasons that “it will be far more expensive to cut CO2 emissions radically than to pay the costs of adaptation to the increased temperatures” (318). While I am not equipped to prove or disprove Lomborg’s position, many scientists have convincingly rebutted, and it is quite clear that he privileges short-term benefits over long-term effects. Needless to say, even if he is in error, the skepticism he exhibits must be kept in play. This needs saying: ecologists are frequently exhorting to address environmental imbalances reported by the Worldwatch Institute and suggesting that “eco-centricity” ought to replace egocentrism in contemporary design. Wines quite clearly has no interest in technical issues and presents “green” architecture primarily as a style that might further the battle against Modernism. After some rumination on history, mostly prehistoric history, Wines concludes that Western anthropocentrism is the problem and Zen the solution. Packaged as a coffee-table book, *Green Architecture* features lots of underground buildings, buildings covered with vegetation, SITE projects, projects by Wines’s friends, and a few works by famous architects such as Renzo Piano, Antoine Predock, and Jean Nouvel. Nowhere is the environmental performance of these buildings seriously explored; the obvious thermal problems of Nouvel’s fully glazed Cartier Foundation in Paris tends to take the wind out of the sails of his argument. The absence of Glenn Murcutt, Will Bruder, and Ralph Erskine, architects whose work is valued as much for aesthetics as environmental performance, suggests a partiality that verges on ignorance. The “green”
imagined by Wines appears to be above all a color for marketing. With the new moral imperative for sustainable architecture, professionals have been quick to recognize the commercial value of a green label. HOK, among the ten largest corporate design firms in the US, is not the first name that comes to mind when I think of ecology and architecture, but nonetheless they have very convincingly assembled a primer, The HOK Guidebook to Sustainable Design, illustrated exclusively with work from the office. It begins with the Decalogue, “Ten simple things you can do,” and continues for over 150 pages to make pragmatic lists about construction and materials, indicating with each item which players in the design process must be present. It’s a bureaucrat’s fantasy come true. Suggestions include sensible, if often obvious, directives: problems may not have lasting value if they are not placed within a larger, cosmological vision of cumulative balance of consumption, resources, and waste management. Sim Van der Ryn, who in the 1970s shepherded California’s energy-conscious State Office buildings into being, provides in Ecological Design (written with Stuart Cowan) a different sort of list, juxtaposing the approaches taken by “conventional design” against those of “ecological design.” Some of the list might be in tune with the HOK lists as far as energy and materials are concerned, but issues such as “Underlying metaphors: Machine, product part, versus Cell, organism, ecosystem” would probably separate the company men from the self-appointed ecologists. Van der Ryn’s holistic approach is mapped out in five principles: grow solutions from place; inform design with ecological accounting; design with na-

While it is difficult for me to claim whether “green” code requirements lead to bad architecture, the general impression given by the examples provided in the green manuals certainly do not promise strong aesthetics—but let us not forget Will Bruder, Ralph Erskine, and Glenn Murcutt.

“Give preference to locally manufactured materials where cost and performance are equal.” For non-pressure pipes and fittings for drainage, seek those that have a 40-100 percent recycled content.” The forty-page glossary ranging from absorption to zinc oxide is quite useful in defining materials and practices, and in explaining their perils and remedies. The obvious problem with the HOK book is that it proposes the solution to the sustainability issue can be achieved with the same positivist logic that is the source of the problem—as if eliminating dubious materials and practices will yield redeeming value. While this may be true to some extent, most other texts written from inside the ecology movement venture that sustainable design will require the proverbial paradigm shift. The short-term technical solutions to tangible environmental
ture; realize that everyone is a designer; and make nature visible. Although he draws upon three of his own works in the attempt to illustrate his theory, his principles seem so general that they could not lead one to concrete architectural action. Again, aside from its ecological functionalism, I doubt that many people would find his Real Goods Solar Living Center in Hopland, California, of transcendent value, at least aesthetic value.

In his discussion of “design with nature,” Van der Ryn describes the sort of natural habitat essential for maintaining biodiversity: a core reserve, buffer zone, and wildlife corridor. These elementary principles, renamed “patch, edge, and corridor,” form the basis of Dramstad, Olson, and Forman’s small tract Landscape Ecology Principles in Landscape Architecture and Land-Use Planning. Despite the redundancy of the title, the book is the most charming and useful among those under review. Using a series of paired icon drawings, the authors explain how the design of the land contributes to or detracts from the viability of species. The observations range from the obvious—“a large patch is likely to have more habitats present, and therefore contain a greater number of species than a small patch”—to the more recondite, “a more convoluted patch will have a higher proportion of edge habitat, thereby slightly increasing the number of species, but sharply decreasing the number of interior species, including those of conservation importance” (31). To the three morphological categories the authors add the synthetic term mosaic to describe the necessary connectivity of fragmented landscape patterns. The book concludes with a few case studies at different scales demonstrating “better” and “worse” development choices.

Not all the design and ecology books are green propaganda. One of the more adventuresome is Sustaining Architecture in the Anti-Machine Age, a series of essays prepared for a British professional conference called “audacity.org.” Although the book was partly funded by Norman Foster and contains a number of designs from his office, it is more than a promotional vehicle. The editors, generally adhering to Buckminster Fuller’s principle of maximizing technology to reduce waste, defend architectural progress in the face of the knee-jerk “moral imperative” of ecology that they see as undermining the aesthetic and technical nerve of designers. While the volume does not offer a concerted argument because of its multiple authors, it nonetheless contains offerings of serious polemical interest. The essay “Design Tokenism and Global Warming” lobs a sobering reminder toward the ambitions of sustainable architecture, claiming that even the best and most universally applied energy-saving strategies in buildings would be relatively ineffectual in reversing the already advanced processes of global
warming. The authors call for common sense rather than excessive legislation, fearing an insufferable “green” bureaucracy based on environmental norms of the sort that would appeal to the libido of HOK but that in general are already making it difficult to get beyond the requirements to something approximating architectural expression. While it is difficult for me to claim whether “green” code requirements lead to bad architecture, the general impression given by the examples provided in the green manuals certainly do not promise strong aesthetics—but let us not forget Will Bruder, Ralph Erskine, and Glenn Murcutt.

The most contentious polemic is voiced by Martin Pawley, an obstreperous critic who has been engaged with ecology since the 1970s, in his “Sand-Heap Urbanism of the Twenty-First Century.” Going against the conventional ecological wisdom that traditional urban patterns are the solution for a sustainable future, he asks, “If all the problems are urban problems, why should we expect the answers to be urban answers?” (152). In a futurist vein, he reasons that cell phones and the internet already have made the virtual city a reality. While center cities have been struggling with antiquated transportation systems and unable to build a minimum of new urban spaces for contemporary needs, millions of square meters have been successfully produced along trade routes as “abstract urbanism,” carrying out most of the functions of cities on the nebulous outskirts of metropolitan districts. Without acknowledging Frank Lloyd Wright’s Broadacre City, he advocates “special rural dwellings” on plots that are minimum 0.404 hectares (a little over an acre), well equipped for information-related occupations, and accessed by non-polluting vehicles (hydrogen-fueled cars like the ones made by Toyota and Honda that can already be leased in California).

While Pawley’s hypothesis of a “de-materialized metropolis, ephemeralized, entropic, evenly distributed” may indeed be the destiny of an affluent, technocratic society, I fail to see how it will eliminate the environmental problems of cities in general. After all, paper use has increased substantially since the advent of PCs was supposed to create the paperless office, and cities will no doubt continue to expand during the process of digitalization, as will the challenges of sustainable management of resources and waste. What is certain is that any theory of design and ecology must acknowledge that the bottom line of sustainability is not the individual building but urbanism. Achieving sustainability through the design of a single building is somewhat like recycling at home—one feels one has done something right, but the environmental impact is negligible. Cities, on the other hand—those like Mexico City, where the air is so thick you can cut it with a knife, or Cairo, where the water is so lurid it seems suitable only for flushing—display the tip of an environmental problem that worsens by the minute. Estimates vary, but currently at least half of the world’s population lives in urban areas and of those the majority lives in poverty and squalor.

For many theorists and practitioners, the answer to the urban problem is suburban. Eco-Urbanism, edited by Miguel Ruano, is the first book I’ve found that attempts to survey sustainable urbanism, and I was struck by how many of his examples were suburban. Using sixty case studies from all over the planet, Ruano presents seven categories in which significant changes are being made: mobility, resource conservation, participation, community, eco-resorts, revitalization, and tele-villages. The selection of projects is well-balanced between high-tech, such as Norman Foster’s Solar City in Linz, Austria, Neo-Traditional, such as Celebration, Florida, and naturalistic, such as Lucien Kroll’s Ecolonia neighborhood in Holland. That most of the projects are in suburban situations simply reflects the social class that offers the most sympathetic patronage for such an agenda. Excepting Curitiba, Brazil, and a plan for Bucharest, Romania, almost all of the schemes are for bourgeois inhabitants. The urbanizations are generally proposed within the liberal mindset of a trickle-down economy, and even though they might comprehend low energy transportation, solutions are inevitably for the highest energy consumers, who drive, fly, and consume resources with impunity.

Only a few projects in Eco-Urbanism, such as Yuichiro Kodoma’s Tokyo EcoRenewal, attempt a radical revision of a dense urban environment, concocting a luxuriantly planted hillside from a five-story mixed-use structure. Conspicuously missing from the examples is Freiburg in southern Germany, a city that has pursued a coordinated strategy of photovoltaics installed on public buildings, bus lanes, and bike paths, to emerge as a “solar region.” There is no universal Eco-urban approach: some use narrow streets, others have no streets at all. Clustering, solar orientation, and greenbelts are usually present, but many of the ecological aspects of these projects, such as grey water recycling, are listed but not shown. Peter Calthorpe’s conversion of a large shopping mall into a dense suburban neighborhood in Mountain View, California, is featured in the “mobility” section of the book and demonstrates the application of his Transit Oriented Development proposals presented in The Next American Metropolis. How different America would be if, as in Paris, one were always within a ten-minute walk of a transit stop! Calthorpe’s major inspiration, in which he seeks to achieve a balance between urban and rural, is Ebenezer Howard’s Garden Cities of Tomorrow, first published in 1898.

Likewise Peter Hall and Colin Ward choose the Garden City ideal as the basis of a sustainable urbanism in Sociable Cities: The Legacy of Ebenezer Howard: The first half of the book provides an excellent historical analysis of Howard’s life and work and the effect that the first two garden cities of Letchworth and Welwyn had on later planning policies. The authors stress Howard’s demand for a network of “social” (interdependent and socialist) cities
arranged as satellites around a core city, with protected greenwards in between, to obtain a critical mass of 250,000 inhabitants without upsetting the natural and agricultural surroundings. The transformation of these experiences into government policy in the Postwar New Towns movement, during which twenty-eight new settlements successfully housed 2,254,300 people, effectively drew off some development pressure from London’s core (53).

The second half of Sociable Cities considers a contemporary revival of the Garden City. The “abstract urbanism” mentioned above attests to how much has been conceived outside the well-meaning plans of new towns and planned neighborhoods. “Plotlands,” as the authors call them, make up the majority of new urbanization by small developers speculating on suburban land. Unlike the New Towns and Garden Cities, most of these developments are not coordinated for transportation or services. Meanwhile in England and other advanced countries, certain urban trends have started to reverse: more people and jobs are leaving the city than migrating to it, more households are made of singles than of nuclear families, and the automobile is an indispensable for these situations. Hall and Ward offer twelve suggestions for creating “sociable cities” in light of the new historical circumstances. They prefer the existing metropolis will reshape itself in emulation of the Garden City, but such proposals seem to presume the sort of universal well-being and concerted planning and development practices that rarely exist.

How can a transition to sustainability occur? Legislation is only a partial solution. Until it becomes a question of economic viability, ecological design will only appeal to the righteous, the frightened, or the enlightened. One of the most influential books of the moment, Natural Capitalism by Paul Hawken, Amory Lovins, and L. Hunter Lovins, offers a compendium of pragmatic and strategic advice for infiltrating the system. The Lovinses, founders of the Rocky Mountain Institute and co-designers of its building (1984), a work that is illustrated in almost every survey of ecological design, believe in learning by doing. Their optimistic appeal to a “green” industrial revolution proposes a four-pronged method for remodeling production and consumption more sustainably.

What is certain is that any theory of design and ecology must acknowledge that the bottom line of sustainability is not the individual building but urbanism. Achieving sustainability through the design of a single building is somewhat like recycling at home—one feels one has done something right, but the environmental impact is negligible. They are considered renewable. 2) Biomimicry: If industrial processes more closely resembled natural organisms, they could eliminate most waste. 3) Service and Flow Economy: If consumer goods were considered services (like rental cars), they could be more efficiently managed. 4) Investing in Natural Capital: Nature needs compensation; just as the bourgeoisie was forced to house and educate the working class in order to have industrial production, so the sources of water, arable land, and air will need replenishing for our survival. The notable financial successes of the NMB (now ING) bank in Amsterdam and the Village Homes development in Davis, California, are offered as case studies for gaining economic advantage through sustainable resource management and waste reduction. The remarkable case of Curitiba, in which transport, waste management, and human services evolved into a coordinated strategy, demonstrates how with a little public guidance economic incentives for taking public transport and recycling make sustainability seem to be in one’s own best interest.

Considering the oppressive control practiced in the name of communism, I doubt that many will seek out Karl Marx on ecology: John Bellamy Foster’s Marx’s Ecology: Materialism, and Nature is thus worth a read and will help me conclude. If most of the books reviewed here are short on humanism and sorely undernourished in historical and philosophical perspective, they might benefit from this study, which traces the theoretical connections between the greatest social thinker of the 19th century and Darwin. Who would have imagined that Marx wrote his thesis on Epicurus, arguably the intellectual source of ecology—the study of how everything in nature is linked to everything else. “Nothing comes from nothing” is the Epicurean invitation to experience nature through materialism. Marx focused on the ancient idea of entropy, called mors immortalis, as the essence of the world process. His awareness of Darwin and all of the consequences the idea of entropy will have on the theory of dialectical materialism could help rehabilitate Marx’s intellectual position to one of political consequence in a world increasingly concerned with environmental issues. The emergence of a “dialectical ecologist” capable of dismantling the burden of determinism, both that causes environmental problems but also that inheres in authoritarian scenarios for obtaining sustainability, seems more valuable to...
the ecology movement than all its good intentions.

Books reviewed

Eco-Urbanism: Sustainable Human Settlements, 60 Case Studies, Miguel Ruano, Barcelona: Editorial Gustavo Gili, 1999
Green Architecture, James Wines, Cologne: Taschen, 2000
Sociable Cities: The Legacy of Ebenezer Howard, Peter Hall and Colin Ward, Chichester: John Wiley & Sons, 1998

Richard Ingersoll teaches architectural history at Syracuse University in Florence and urban design at the University of Ferrara, Italy. His most recent books include World Architecture 1900–2000: A Critical Mosaic, Vol. I: Canada and the United States (General Editor, Kenneth Frampton) and La Periferia Italiana (with Lorenzo Bellicini).