

Building for Life: Designing and Understanding the Human-Nature Connection

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Interaction with nature is critically important to human well-being and development, but sadly has become compromised and diminished in modern times. Through deliberate design, this connection can be repaired and restored. Unfortunately, contemporary society has become confused about the role of the natural environment in people's physical and mental lives. Many believe that the progress of civilization depends on subjugating and converting, if not conquering, the natural world. Indeed, many see this progression as the essence of civilization.¹

Why should they presume this to be so? First, most people recognize that the production of huge food surpluses by a tiny fraction of the population permits others to obtain their basic needs at a relatively low cost and to exercise an extraordinary degree of mobility. Producing such surpluses has until now relied on the wholesale conversion of natural habitats into vast monocultures used to grow a small number of crops or raise a few species

of livestock at massive industrial scales. Second, modern society has made a range of manufactured products available far beyond what even the richest would have thought possible a millennium ago. The variety of goods available at a typical mall today dwarfs what the most privileged nobility would have experienced in the past. This contemporary level of consumption has depended until now on massively extracting, fabricating from, and then disposing of huge quantities of natural resources. Third, most people today anticipate relatively good health and long lives, which they attribute primarily to the miracles of modern medicine, whose "conquest of disease" has largely relied on suppressing other life forms through championing anti-septic conditions.

All these trends of subjugating and eliminating wild nature have been supported, at least until recently, by the conventional design and development of the human-built, principally urban environment. It is sobering to realize that only two centuries ago, Great Britain was the first nation to have a majority of its population residing in an urban area, now arguably the most common feature of modern life.² Today some two-thirds of the developed world lives within the shadow of a metropolitan area. And the greatest migration in

human history is happening now, as hundreds of millions of people migrate from the countryside to the cities in China, India, and elsewhere.

Urbanization historically has relied on converting natural diversity into largely homogenous landscapes of impervious surface, consuming enormous amounts of resources and materials, and generating huge quantities of waste and pollutants. Consequently, the modern urban environment now consumes some 40 percent of energy resources, 30 percent of natural resources, and 25 percent of freshwater resources while generating one-third of air and water pollutants and 25 percent of solid wastes.³ This prevailing paradigm of urban development is neither necessary nor sustainable and constitutes more a design deficiency than an intrinsic and inevitable flaw of modern life. Still, these tendencies collectively have encouraged many to believe that the benefits of contemporary society depend on massively exploiting, if not conquering, the natural world. For many, progress and civilization have been equated with humanity's distance from and subjugation of nature.

Nonetheless, most people continue to intuit that the health and diversity of the environment are related fundamentally to their own physical, mental, and even spiritual well-

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being.⁴ Most sense that the natural world is far more connected to the quality of their lives than is revealed through the narrow metrics of material production and modern economics. In poll after poll in the United States and in other countries, the majority of respondents cite the environment as important.⁵ The stubborn belief persists that the natural environment is profoundly related to people's physical, psychological, and moral well-being, an assumption that is reflected in many of our preferences, cultural creations, and constructions. Our connection to nature figures into the materials we choose, the decorations we employ, the recreational choices we make, the places we live, and the stories we tell. Nature continues to dominate the forms, patterns, and language of everyday life, despite the impression that, in a narrow technical sense, the natural world often seems neither necessary nor germane to the functioning of a modern urban society.

Despite the evident connections, contemporary society still fails to recognize and defend the importance of healthy and diverse natural systems to sustaining the quality of people's lives, especially in urban areas. Perhaps we have taken for granted what has always been readily available, like a fish failing to recognize the virtues of its water realm. The presence of the natural world has been an unquestioned constant for much of human history, generally noticed only as an adversary or appreciated only when no longer accessible. We have only recently encountered nearly ubiquitous environmental damage and a feeling of alienation from nature produced by huge human populations, consumption, urbanization, resource depletion, waste generation, pollution, and chemical contamination.⁶ Only during the past fifty years has the scale of our excesses fundamentally altered the earth's atmospheric chemistry, causing the widespread loss of biological diversity and

even threatening the future of human existence.

Thus, we confront two warring premises in contemporary society regarding our relationship with the natural world. On the one hand is the widespread belief that the successes of the modern world depend on controlling and converting nature. On the other hand rests the persistent impression that human physical, mental, and even spiritual well-being relies on experiencing healthy and diverse natural systems. I ascribe to and defend the latter view, that nature—even in our modern urban society—remains an indispens-

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able, irreplaceable basis for human fulfillment. Degrading healthy connections to the natural world impoverishes our material moral capacity. Through deliberate design, we may restore the basis for a more compatible, and even harmonious, relationship with nature.

The focus is thus on three major issues. First, empirical evidence from diverse sources is marshaled to support the contention that experiencing natural process and diversity is critical to human material and mental well-being. Second, childhood is considered as the time when experiencing nature is most essential to human physical and men-

tal maturation, even for a species capable of lifelong learning. Unfortunately, for both children and adults, an impoverished natural environment has become widely common, especially in urban areas. Thus, I recommend considering how a new paradigm of designed development can help reestablish the beneficial experience of nature in the modern built environment.

Underlying much of the examination of humans and nature is the concept of biophilia.⁷ Biophilia refers to humans' inherent affinity for the natural world, which is revealed in nine basic environmental values. Developing these nine values can foster physical capacity, material comfort, intellectual development, emotional maturation, creative ability, moral conviction, and spiritual meaning. The inherent inclination to attach value to nature, however, is a "weak" genetic tendency whose full and functional development depends on sufficient experience, learning, and cultural support.

The adaptive interaction of culture and nature is vital at any point in a person's life. But, because this interdependence is biologically based, it is logical to assume that the most critical period in this formative development is likely childhood.⁸ Young people need to engage the natural world repeatedly and in multiple ways to mature effectively. Yet, for many children as well as for adults, modern society has produced an increasingly compromised and degraded natural environment that offers far fewer opportunities to experience satisfying contact with nature as an integral part of ordinary life.⁹ The many symptoms of this declining condition include extensive air and water pollution, fragmented landscapes, widespread loss of natural habitats, destruction of biological diversity, climate change, and resource depletion. These trends have resulted in threats not only to human physical and material security but also to nature's role as an essential medium

for people's emotional, intellectual, and moral development.

These deficiencies of modern life can be ameliorated through adopting an innovative approach to the design and development of the human built environment. This new paradigm, called restorative environmental design, focuses on how we can avoid excessively consuming energy, resources, and material; generating massive amounts of waste and pollutants; and separating and alienating people from the natural world. As intimated earlier, the current environmental crisis is considered a design failure rather than an unavoidable aspect of modern life. Both the knowledge and the technology exist to better reconcile and even harmonize the natural and human environments. However, meeting this enormous challenge will require two conditions. First, we must minimize and mitigate the adverse environmental effects of modern construction and development. Second, and just as important, we must design the built environment to provide sufficient and satisfying contact between people and nature.

In recent years, alternative design and development approaches—commonly referred to as “sustainable” or “green” design—have emerged that focus on minimizing the adverse effects of the built environment on nature and on human health. The label “restorative environmental design” is used here instead of “green design” because the former underscores the need to also reestablish positive connections between nature and humanity in the built environment. The damage caused to natural systems and human health by modern construction can be minimized and mitigated through many strategies, including pursuing energy efficiency, using renewable energy, reducing resource consumption, reusing and recycling products and materials, lessening waste and pollution, employing nontoxic substances

and materials, protecting indoor environmental quality, and avoiding habitat destruction and loss of biodiversity. This overall objective is called low environmental impact design, a necessary, but by itself insufficient, basis for true sustainable design and development. Although essential and challenging, low environmental impact design ignores the equally important need to restore beneficial contact between people and nature in the built environment. Unfortunately, low environmen-

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tal impact design has become the primary approach of sustainable design and development today.

The additional objective of fostering satisfying contact between people and nature in the built environment is called positive environmental impact, or “biophilic” design. Biophilic design includes two basic dimensions: organic (or naturalistic) design and vernacular (or place-based) design. Organic design involves the use of shapes and forms in buildings and landscapes that directly, indirectly, or symbolically elicit people's inherent affinity for the natural environment. This effect can be

achieved through the use of natural lighting, ventilation, and materials; the presence of water and vegetation; decoration and ornamentation that mimics natural forms and processes; and other means. Vernacular design refers to buildings and landscapes that foster an attachment to place by connecting culture, history, and ecology within a geographic context.

Thus, restorative environmental design incorporates the complementary goals of minimizing harm and damage to natural systems and human health as well as enriching the human body, mind, and spirit by fostering positive experiences of nature in the built environment. Each of the major design emphases associated with restorative environmental design—low environmental impact design and the two aspects of biophilic design, organic and vernacular design—is an outgrowth of three theories that explain how natural systems affect human physical and mental well-being. Specifically (1) low environmental impact design sustains various ecosystem services on which human existence relies, (2) organic design fosters various benefits people derive from their tendency to value nature (biophilia), and (3) vernacular design enables a satisfying connection to the places where people live, also a necessary condition of human well-being.

The various scientific, theoretical, and practical considerations discussed above should be considered comprehensively by addressing the ethics of sustainable development. The connection between human and natural systems—particularly this connection's importance during childhood years and the challenge of restoring beneficial connections between the natural and human built environments through deliberate design—is fundamentally an issue of values and, ultimately, of ethics. We must confront such basic considerations as how we think we fit into the natural world and how the relation-

ship between nature and humanity reflects our basic conceptions of what is good, right, fulfilling, and just.

Most "utilitarian" approaches to these ethical questions emphasize how protecting nature sustains people's physical and material existence. Yet many view this ethical point of view as too narrow, advocating instead that we protect and sustain the natural environment for its intrinsic importance, independent of its material benefit to people. Positing that both of these ethical approaches are flawed and insufficient, I instead advance a greatly expanded utilitarian ethic of sustainability that promotes the health and integrity of natural systems not only for their physical and material rewards, but also because they advance equally important human emotional, intellectual, and spiritual needs. This ethic of sustainability embraces a vastly expanded understanding of human self-interest that reaches far beyond the cramped confines of economic materialism or the unrealistic idealism of nature's value independent of human welfare. This broad utilitarian ethic recognizes and affirms how the natural world serves as an indispensable basis for what it means to be not only physically and materially secure, but also emotionally and intellectually whole, endowed with a sense of love and beauty, and reverent of creation.

At times, the enormous environmental challenges facing us today can easily provoke great pessimism. Yet, my overall outlook is fundamentally optimistic, confident in the human capacity to envision and create a world of a compatible, and even harmonious, relationship with nature. Despite our enormous capacity for consumption and development, humans should not be viewed as a kind of "weed" species that inevitably impoverishes the natural environment. Instead, people are capable of existing in sustainable relation to nature, even of enriching the natural world's productivity and health.

This choice reflects the extraordinary free will of our species, a double-edged sword that can result in life-affirming creativity or self-destructive behavior.

Both theory and evidence to support the view that human physical, mental, and spiritual well-being remains dependent on the quality of our healthy interaction with the natural environment. Modern society has clearly diminished and compromised this possibility. Yet, the understanding and technology needed to restore positive ties between nature and humanity exist and are ever expanding. The Pulitzer prize-winning biologist René Dubos labeled this potential that of "wooing of the earth." He suggested:

"Wooing of the earth suggests that the relationship between humankind and nature should be one of respect and love rather than domination. Among people the outcome of this wooing can be rich, satisfying, and lastingly successful only if both partners are modified by their association so as to become better adapted to each other.... With our knowledge and a sense of responsibility for the welfare of humankind and the earth, we can create new environments that are ecologically sound, aesthetically satisfying, economically rewarding, and favorable to the continued growth of civilization. But the wooing of the earth will have a lastingly successful outcome only if we create conditions in which both humankind and the earth retain the essence of their wildness. The symbiosis between these two different but complementary expressions of wildness will constantly engender unexpected values and new hopes, in an endless process of evolutionary creation."¹⁰

The objective of restorative environmental design depends on wooing the earth in a deliberate, knowing, and gentle fashion. Doing this will be immensely difficult given the current extremes of human consumption, population, technology, urbanization, waste, pollution, and environmental destruc-

tion. Can people ever know enough to fabricate effective solutions to complex large-scale problems? Perhaps we would do better to pursue a more modest, restricted, gradual process of resolving the problems of nature and humanity. Unfortunately, the enormity and pace of the contemporary human onslaught on natural systems dictate otherwise, leaving us little choice but to respond ambitiously. The uncertainty of the outcome represents the particular morality play of our age.

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Meetings, Workshops & Symposia

See <http://www.rnrf.org> for additional meetings

Society of Conservation Biology 20th Annual Meeting. June 24-28, San Jose, CA. Conservation Without Borders. Contact: Website: <http://www.conbio.org/2006>.

Society of Wood Science and Technology Annual Conference. June 25, Newport Beach, CA. Website: <http://www.swst.org/annualmeeting.htm>.

International Conference on Rivers and Civilization. June 25-28, La Crosse, WI. Multidisciplinary Perspectives on Major River Basins. Contact: James Wiener, (608) 785-6454. Email: weiner.jame@uwlax.edu. Website: <http://www.rivers2006.org>.

American Water Resources Association Summer Specialty Conference. June 26-28, Missoula, MT. Adaptive Management of Water Resources. Contact: AWRA, 4 West Federal Street, P.O. Box 1626, Middleburg, VA 20118-1626. (540) 687-8390. Fax: (540) 687-8395. E-mail: info@awra.org. Website: <http://www.awra.org/meetings/Montana2006>.

Climate and Health Colloquium. July 16-22, Boulder, CO. Contact: V. Wynne, Institute for the Study of Society & Environment, National Center for Atmospheric Research, P.O. Box 300, Boulder, CO 80307. (303) 497-8117. Fax: (303) 497-8125. E-mail: vwynne@ucar.edu. Website: <http://www.isse.ucar.edu>.

Universities Council on Water Resources Annual Conference. July 18-20, Santa Fe, NM. Increasing Freshwater Supplies. Contact: UCOWR, Southern Illinois University, Carbondale, IL 62901-4637. (618) 453-6020. Fax: (618) 453-7346. Website: <https://www.worldwideregistration.com/ucowr/registration.php4>.

Soil and Water Conservation Society International Conference. July 22-26, Keystone, CO. Contact: SWCS, 945 SW Ankeny Rd., Ankeny, IA 50023. (515) 289-2311. Fax: (515) 289-1227. Website: http://www.swcs.org/en/swcs_international_conferences.

International Society for Arboriculture's 82nd Annual Conference and Trade Show. July 31-August 2, Minneapolis, MN. Contact: ISA, 1400 West Anthony Drive, Champaign, IL 61821. (217) 355-9411. Website: <http://www.isa-arbor.com/conference/default.aspx>.

Coastal Zone Canada Conference. August 12-18, Tuktoyaktuk, Northwest Territories, Canada. Arctic Change and Coastal Communities. Contact: Steve Newton, (204) 984-5561. E-mail: newtons@dfo-mpo.qc.ca.