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In Search of the Jolly Green Giant

Emerging Ideas about Sustainable Housing

Lawrence Scarpa

Finding the means and forms of sustainability is the greatest challenge faced by architecture and urbanism.
—Michael Sorkin

Early architects and builders helped humankind survive in a hostile world. In our journey from rudimentary and primitive shelters to an architecture that represents contemporary culture, we are experiencing a paradigm shift in our attitude about the earth. We are currently experiencing a transition from merely surviving on earth to considering how can we live so that the earth can survive. As a result, ideas of sustainability have never had more potential and power to enrich and broaden our culture as well as our architectural language.

Aldo Leopold (1887–1948), considered the father of wildlife ecology and a renowned scientist and scholar, put forth some early influential ideas about sustainability with the publication of his book, *A Sand County Almanac* (1949). In the Almanac, Leopold begins to articulate his concept of a “land ethic.” He raised concern for an environment’s carrying capacity, or its ability to absorb human influence and still sustain its life forms and processes. Over the past decade, the term “Sustainable Architecture,” used to describe the movement associated with environmentally conscious architectural design, has gained support and become much more interesting to architects, planners, educators, and the general public. The movement has

gained enough momentum to influence public policy and many cities across the country. Cities such as Santa Monica, Los Angeles, Austin, Portland, Pittsburgh, and Seattle are just a few that now require all new public buildings to meet the sustainability standards set forth by the United States Green Building Council’s LEED (Leadership in Energy Efficient Design) program.

Despite this great interest in sustainability, the majority of green buildings have been little more than an exercise in energy efficiency. Only a handful of sustainable buildings have captured the hearts and minds of the architectural community. Even fewer have received the accolades bestowed upon the greatest works of architecture. Those who practice the principles of responsible and environmentally sensitive design have made little progress in convincing the architectural community about the importance of such a movement and its perceived aesthetic value.

The green movement in architecture has yet to achieve any cultural power. As James Wines, founder of the interdisciplinary SITE Environmental Design, has pointed out, “Buildings that last because they are adaptable and aesthetically pleasing are arguably more green than a whiz-bang green building that nobody wants to live in. People will never want to have an aesthetically inferior building around, no matter how well stocked it is with cutting-edge thermal glass,



Tree House

photovoltaic cells, and zero-emission carpeting.” The challenge is to get architects and designers to embrace the idea of sustainability as a serious and potent ideology in design, space, and form making. Here is a clear opportunity to fundamentally shift how we think about architecture and find a new lexicon that transcends mere technological achievement. This will require us to use our greatest assets as designers: our creativity and ability to solve problems.

Sustainable architecture involves a thoughtful combination of environmental, aesthetic, ethical, political,

and social concerns. Most importantly, architecture and sustainability should not be considered mutually exclusive. Given that, as of 1990, 60% of the total U.S. population have lived in detached single-unit dwellings and building construction accounts for 40% of the 7.5 billion tons of raw materials annually extracted from the earth, it is imperative that we consider sustainability when we think about housing. Consider these facts: energy consumption is a \$3 trillion business worldwide; our consumption of energy is approximately 30% efficient, meaning there is a \$2 trillion opportunity; buildings consume nearly one third of America’s

energy; debris from construction and demolition of buildings make up 35% of U.S. landfills; and approximately 54% of the work that is carried out in the construction industry is devoted to building maintenance.

Lewis Mumford, the great architectural historian, wrote in an essay on architecture and civilization:

Our architectural development is bound up with the course of our civilization. To the extent that we permit our institutions and organizations to function blindly, as our bed is made, so must we lie on it. The future of our civilization depends upon our ability to select and control our heritage from the past, to alter our present attitudes and habits, and to project fresh forms into which our energies may be freely poured.

We are ready for new housing prototypes.

My personal interest in and research about housing and sustainability dates back to 1984 when I was a graduate student and long before ideas about sustainability were widely accepted or even considered. My graduate work, which focused on environmentally sensitive housing, won a national design competition sponsored by Follansbee Steel and *Architectural Record*. Subsequent development of this work titled “Tree House” was published in *Progressive Architecture* in March of 1991 in a special issue titled “Architects and the Environment.” As I matured as a designer and began to understand the profession of architecture, I realized the need to carry some of the burden and responsibility for the survival of our future generations.

So why is sustainable architecture so important? Is it necessary that our profession embraces the ideas of building responsibly? Is slaying the myth of the Jolly Green Giant critical to our survival, or is it simply another fairy tale? As in

any good truth or tale, there are many questions to ask and stories to be told. Certainly there is a place in history for the story of sustainability. Whether it becomes folklore or a passing fad is still unknown. Nonetheless, stories, legends, and myths will continue to grow. My story continues to unfold and is written chapter by chapter, building by building. Here are two recent projects, or pieces of a story, that represent almost twenty years of my personal search to uncover the myth of the Jolly Green Giant.

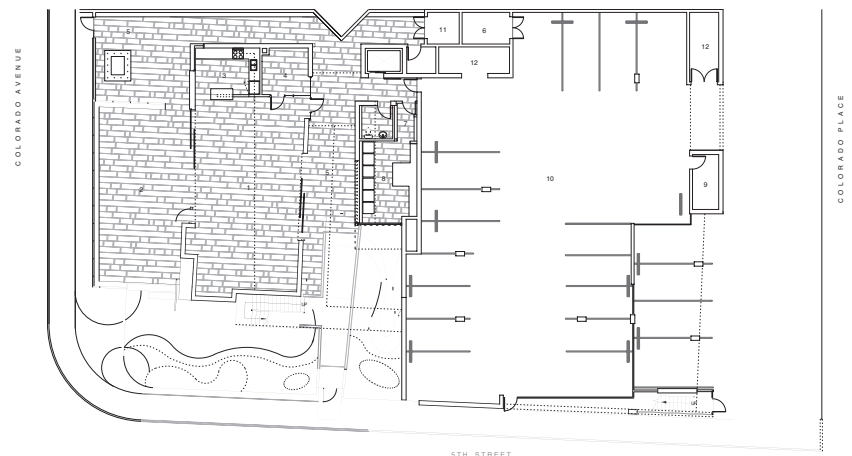
Colorado Court

Located at the corner of a main off-ramp of the Santa Monica Freeway, Colorado Court’s highly visible position makes it a gateway to the city. The forty-four-unit five-story building is the first affordable housing project in the United States to be 100% energy neutral. Designed to not only reduce energy usage, the building actually returns unused power back into the energy grid.

Innovative sustainable-energy technologies developed for Colorado Court include a natural gas-powered turbine heat recovery system that generates the base electrical load and services the building’s hot water needs as well. A solar electric panel system integrated into the facade and roof supplies most of the peak-load energy demand. This unique co-generation system converts utility natural gas to electricity in order to meet the building’s power needs. This same system also captures and uses waste heat to produce hot water and space heating for the residents throughout the year. The unused energy from these passive solar panels is returned to the grid during daytime hours and retrieved from the grid at night as needed. The “green electricity” produced at the building site releases no pollutants into the environment. Colorado Court’s energy conservation systems have been designed to pay for themselves in less than ten years. Annual savings in electricity



Colorado Court



Colorado Court, Ground floor plan and second floor plan



and natural gas exceed \$6,000. The building also collects rainwater runoff from the entire city block behind the property and funnels it into a series of underground chambers. The water slowly percolates back into the soil, which filters the pollutants from the water while preventing contaminated water from spilling into Santa Monica Bay. Prevailing breezes cool the building, which has no air conditioning.

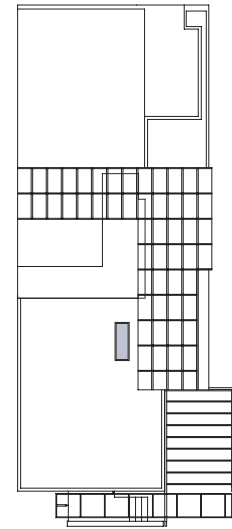
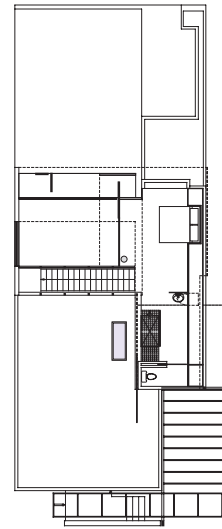
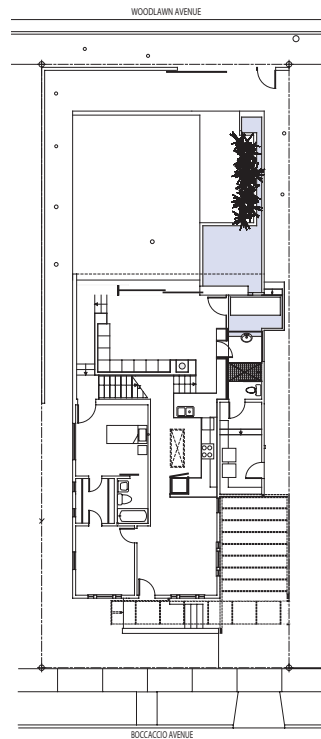
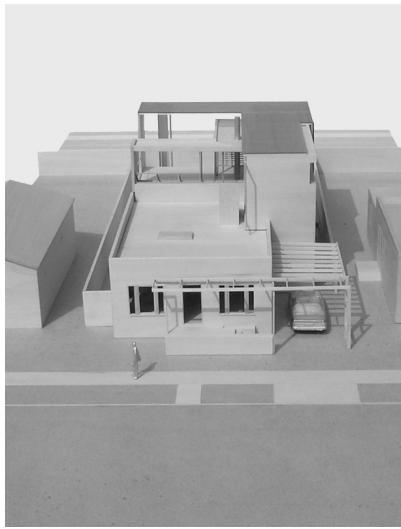
A host of public and private entities—including the cities of Santa Monica and Irvine, Southern California Edison, and the California Energy Coalition—were involved in planning, funding, and monitoring the building. The two cities, the conservation group, and the utility have formed a group known as Regional Energy Efficiency Initiative, which has contributed approximately \$250,000 to energy-saving devices in the building. In addition, the City of Santa Monica has contributed approximately \$250,000 toward electricity generators. When use of the net-metering was prohibited by the utility's regulations,

which had been drafted to conform to Public Utilities Commission mandates, along with the City of Santa Monica lobbyist, working with State Senator Sheila Kuehl, we went all the way to the California legislature to get the regulations changed.

Solar Umbrella

Nestled amidst a neighborhood of single-story bungalows in Venice, California, the Solar Umbrella establishes a precedent for the next generation of California modernist architecture. Located on a forty-one-by-one hundred-foot through-lot, the residential addition transforms the existing 750-square foot bungalow into a 1,900-square foot residence equipped for responsible living in the twenty-first century.

Inspired by Paul Rudolph's Umbrella House of 1953, the Solar Umbrella provides a contemporary reinvention of the solar canopy—a strategy that provides thermal protection in climates with intense exposures. In establish-

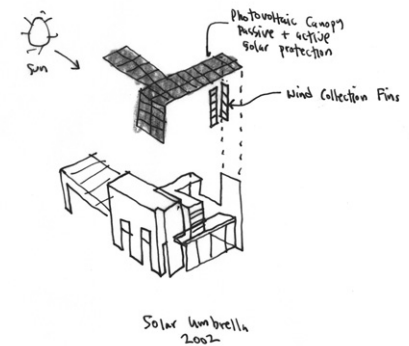
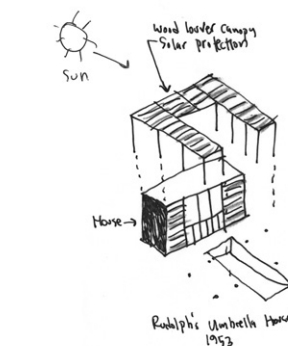


ing the program for the residence, we chose to integrate into the design, principles of sustainability that we strive to achieve in our own practice. We carefully considered the entire site, taking advantage of as many opportunities for sustainable living as possible. Passive and active solar design strategies render the residence 100% independent from the grid. Recycled, renewable, and high performance materials and products are specified throughout. Hardscape and landscape treatments are considered for their aesthetic and actual impact on the land. The design elegantly crafts each of these strategies and materials, exploiting the potential for performance and sensibility while achieving a rich sensory and aesthetic experience.

Taking advantage of the unusual through-lot site condition, the addition makes possible a 180-degree shift from the existing house's original orientation. What was formerly the front and main entry at the north becomes the back as the new design

reorganizes the residence towards the south. This move allows us to create an entry garden and optimize exposure to energy-rich, southern sunlight. A display of solar panels wrapping around the south elevation and roof becomes the defining formal expression of the house. Conceived as a solar canopy, these panels protect the body of the building from thermal heat gain by screening large portions of the structure from direct exposure to the intense Southern California sun. Rather than deflecting sunlight, the solar skin absorbs and transforms the rich resource into usable energy, providing the residence with 100% of its electricity. Like many of the design features, the solar canopy is multivalent and rich with meaning—performing several roles for functional, formal and experiential effect.

The original bungalow, which was tightly packed with program (kitchen, dining, living, two bedrooms, and a bath), is joined by the new addition to the south, which includes a new entry,



living area, master suite, and utility room for laundry and storage. The kitchen, which once formed the back edge of the residence, opens into a large living area, which in turn, opens out to a spacious front yard. An unbroken visual corridor is established from one end of the property to the other. Taking cues from the California Modernist tradition, we conceived the exterior space as a series of outdoor rooms. By creating strong visual and physical links between outside and inside, these outdoor rooms interlock with interior

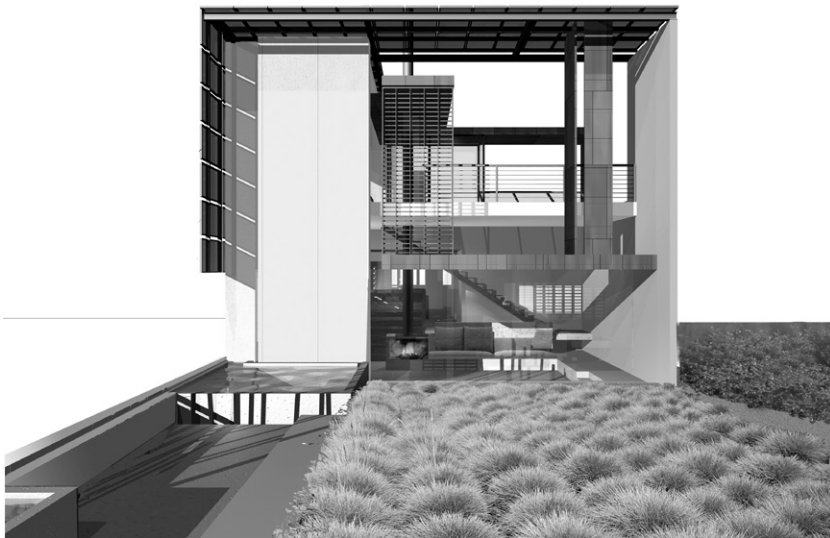
spaces, blurring the boundary and creating a more dynamic relationship between the two.

The master suite on the second level reiterates the strategy of interlocking space. Located directly above the new living area, up a set of floating, folded plate steel stairs, the bedroom strategically opens onto a deep, covered patio which overlooks the garden. Conceptually reminiscent of R.M. Schindler's Kings Road Residence, this patio extends the bedroom area



outdoors, creating the sensation of a sleeping loft exposed to the exterior. This deep porch carves out an exterior space within the visual bounds of the building envelope and provides the front elevation with a distinctive character. What appears to be a significant area of the second floor is actually never enclosed but rather, it is protected by the planes that wrap around it.

Transparency through the house allows views to penetrate from front to back. The structure appears to sit lightly upon the land. Light penetrates the interior of the residence at several locations. Light and shadow—ephemeral and constantly changing effects—become palpable formal tools that enliven the more permanent and fixed elements of the design. Together, all of these components establish an effectively



layered composition rich in visual and formal interest.

Throughout the residence, we resourcefully take materials and contextually reposition them as design elements. Solar panels, conventionally relegated to a one-dimensional utilitarian application, define envelope, provide shelter, and establish a distinctive architectural expression. Homosote, an acoustical panel made from recycled newspaper is palm-sanded and used as a finish material for custom cabinets. OSB (oriented strand board) a structural grade building material composed of leftover wood chips, becomes the primary flooring material. Sanded, stained and sealed, the OSB floor paneling provides a cost effective and materially responsible alternative to hardwood. Framing material is a combination of

certified forest products, composite wood, and reclaimed wood from demolished buildings. Recycled steel panels, solar powered in-floor radiant heating, high-efficiency appliances and fixtures, and low-v.o.c. paint replace less efficient materials. Decomposed granite and gravel hardscape are used in place of concrete or stone. Unlike their impervious alternatives, these materials allow the ground to absorb water and in turn, mitigate urban run-off to the ocean. Drought tolerant xeriscaping compliments the textures and palette of the building while providing a low-maintenance, aesthetically-appealing landscape.

