

Book Review

The Solar House: Pioneering Sustainable Design. By Anthony Denzer. New York: Rizzoli, 2013

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Abstract: This review of *The Solar House: Pioneering Sustainable Design*, by Anthony Denzer, discusses the important contributions of this book to the history of midcentury modern architecture, and considers the role of solar houses in the context of current debates over sustainability.

Keywords: solar house; sustainability; Fred Keck; Frank Lloyd Wright; Hoyt Hottel; Maria Telkes; Libby-Owens-Ford; glass

Where I live (in rural Massachusetts) there is a recently constructed LEED certified house. Last summer the new owners mowed their special “low-grow” lawn with a riding mower nearly every day in July and August—sometimes inconceivably mowing twice a day. They used their leaf blower (gas powered) to keep their massive yard (bull-dozer designed) completely free from leaves in the autumn. Sometimes, these city-transplants will even shine floodlights at night to leaf-blow in the dark—removing anything that may have fallen during the course of the late afternoon. I am not making this up. At least the floodlights are powered by their super-sized array of solar panels. My point in telling this story is that a LEED certificate does not automatically translate to environmental sensitivity. Neither, it turns out, does the phrase “solar house”.

Leadership in Energy and Environmental Design (LEED) is a set of ratings for architectural design and construction, based on best practices in so-called “green” architecture. Of course I am not alone in seeing the duplicity of much that passes for ecological design today; architects and critics know that LEED credentials are important in raising awareness, and in promoting the use of sustainable materials, but unless the entire system of building and living (post-award) is taken into account, any certification is largely symbolic. Five years ago almost every architecture student in the country was

demanding to learn about environmental materials, techniques, and specifications, and rightfully so. Now the call is for an awareness of corporate and domestic “green washing”—sustainability branding—as a ruse to hide other dubious practices, both environmental and economic. There is a growing concern about our focus on the physical science of sustainability at the expense of social justice—not to mention community, historic, or natural preservation. Not everyone can afford a Prius; not everyone can afford a car, any car. We live in an age of droughts, famines and floods, and of sustainability as bourgeois accouterment. For this reason, studies that trace the history of sustainable architecture and put recent developments in perspective are sorely needed—if only to learn that, in fact, we have not come very far. Is sustainable building the 21st century avant-garde? Or, is it not quite the paradigm shift that we like to believe?

Anthony Denzer’s *The Solar House: Pioneering Sustainable Design* (Rizzoli: New York, NY, USA, 2013) is a history of the first modern house designs that sought to utilize solar gain, from the 1930s to the 1960s. Denzer begins the book with a challenge, by quoting David Pearlmuter: “From familiar accounts of architectural history, one gets the impression that passive solar design is not something that occupied the minds of ‘great’ architects. Could it be that this reflects as much on the historians as it does on the architects?” (p.8) After a short preface that is illustrated with “Bauhaus solar studies” from Sigfried Gideon’s *Walter Gropius: Work and Teamwork* (Reinhold: New York, NY, USA, 1954), the book goes on to cover a number of important pilot projects and experimenting architects and engineers, beginning in the 1930s with Fred Keck—who Denzer refers to as “the first solar architect”. The story begins with Keck’s all-glass, “House of Tomorrow” at the Chicago Century of Progress Expo in 1933. Contrary to oft-repeated myths about his success, the house “got hotter than hell.” (p.39) Designed for air conditioning, the house represents a midcentury belief in mechanical solutions, and this seeming contradiction in using and saving energy points to a key distinction. These early “solar houses” were filled with passive light and warmth, but they did not store energy. As Keck and others continued to experiment with controlling the heat in their first inhabited solar homes, built in the Chicago suburbs, they concerned themselves with lengths of porch overhangs and orientation, and at one point used a shallow pool of water on the roof to cool the overheating houses. The expanses of glass that filled the houses during the day also suffered from extensive heat loss at night; and these problems with the early experiments were never really solved.

At first this book seemed as if it would be a biography whose goal was to insert Fred Keck into the canon of midcentury modern, but soon the story moves on to Frank Lloyd Wright’s fascinating “hemicycle” house in Madison, Wisconsin, a curving house that made use of site orientation, earth berms, and clerestory windows to maximize solar gain in 1943. In contrast to the unremarkable appearance of many of the small houses illustrated in this book, the drawings for the Wright house are stunning. Denzer describes the sensation of being in Wright’s house: “the heavy sense of stone, soil, and horizontal compression at your back” in contrast to the “lightness of glass, sky and vertical expansion ahead.” (p.58) However, Denzer does not seriously investigate the question of what kinds of *aesthetic* decisions “occupied the minds of ‘great architects.’” Attractive formal properties and the technical apparatuses of sustainability need not be in conflict, and this could have been a useful discussion here. Unfortunately, what makes a building “great”, or good, or beautiful, and how to determine this with historical distance, is never deeply addressed. This is a debate that Denzer’s

(Pearlmutter's) opening quotation invites, but one that remains unanswered, lurking below the surface throughout the book.

Denzer does raise a number of other key questions, as his narrative moves chronologically. Conflicts between and within architecture and engineering departments at the Massachusetts Institute of Technology are an interesting back-story to the development of the storage systems that define their solar houses. The chemical engineer Hoyt Hottel created Solar House I in 1939, and continued to create many subsequent versions, eventually leading up to an MIT summit in 1950 on "Space Heating with Solar Energy". His one-time colleague, the Hungarian chemist Maria Telkes (known as the "solar queen") left MIT to develop and promote the "Dover Sun House" in the late 1940s—a competing design that used an ineffective and unstable storage wall. Yet, despite the gender biases that Denzer alludes to, she went on to experiment for decades, and ended up with fifty patents for inventions both solar and otherwise.

Denzer covers the international expansion of solar designs in the 1950s, including work in Morocco, Greece, France, Japan, and the U.K., as well as continued experimentation in the U.S. His book concludes with what he refers to as the "creative activists" of the long 1960s: hippies, dropouts and "mad scientist types". This "solar counter culture" replaced the research labs of universities, where figures like Harry Hay in Arizona, and Steve Baer and Peter van Dresser in New Mexico—a self-described "drop out" from the northeast—worked in their "backyards and workshops". Indeed, the most valuable strength of Denzer's book is in its carefully constructed technical history, in the substantial analysis of numerous architects, engineers, chemists, patrons, and institutions—those I have named and many others. The book is richly illustrated with a variety of built and unbuilt projects—those that were lived-in and those that remained prototypes.

The role of publications in the promotion of solar homes was among the most fascinating discoveries of Denzer's history. *Reader's Digest*, *Ladies Home Journal*, and *House Beautiful* as well as leading news magazines and major newspapers all published lengthy studies of these solar projects. The Libby-Owens-Ford Glass Company proposed to build a solar house by a major architect in all 48 states, including figures like Louis Kahn and Hugh Stebbins. The project did not come to fruition, in part because of their lack of technical know-how. But the pamphlets, competition documents, and the book that published the proposed designs are striking testaments to a solar architectural culture at midcentury. Yet, a sense of where Denzer's study fits into the vast literature on housing after the war would have made it academically stronger; as would a more in-depth discussion of the war efforts and the postwar housing boom. The study of the glass-filled expanse, for example, and the role of the glass industry—so essential to these early solar homes—begs to be considered in relationship to Sandy Isenstadt's study of the picture window in *The Modern American House: Spaciousness and Middle-Class Identity* (Cambridge University Press: Cambridge, UK, 2006).

The occupational diversity of the early solar house builders returns us to current debates. Who defines sustainability studies now? Sustainability is an overused word that has been stretched to mean almost anything. Conversely, it is too often used only for specific applications in the natural sciences. Designers, critics, historians, artists, humanists and others struggle to use the term with any precision. What is sustainable? Something that lasts? Or something that doesn't? Is sustainable design only concerned with materials, technologies, or climate change, or is it as much a mode of thinking—a cultural construction—concerned with the philosophical realms of extinction? As Denzer makes clear,

we don't even know what a “solar house” is (or was). *The Solar House: Pioneering Sustainable Design* serves, then, a simple purpose—it relates in considerable detail the fascinating story of midcentury attempts at creating houses that harnessed the sun. In terms of architectural history, this book extends our understanding beyond that of great makers and monuments to other kinds of design agendas. But perhaps the larger charge for a book like this goes beyond recuperative biographies, commissions, blueprints and publications. It also goes beyond recent changes in the architectural profession, and surely beyond my own anecdotal griping. That is: can we better advance our environmental cause by exposing the false exceptionalism of contemporary sustainable design—if we view today's efforts as part of a long continuum? Or, in fact, does this kind of history of so-called sustainable design diffuse the urgency of what we need to do? While we fiddle the planet burns. As Denzer's extremely informative and well-researched book reveals, we have been fiddling since the 1930s.

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Author Contributions

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Conflicts of Interest

The author declares no conflict of interest.

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