

Prospects for Ecological Design

This essay views ecological design as a broad form of social change at the interface of human choice and technological possibility. For ecological technologies and ideas to be environmentally effective, they have to be widely implemented. Many sustainable building technologies have different attributes than the ones they are intended to seamlessly replace. They may be more or less durable, which could affect the lifecycle of other components connected to them. They may be harder or easier to install, increasing or decreasing the need for tradesmen and laborers. Even in the rare cases where the match is virtually identical, the substitution must be preceded by decisions about design, purchase, installation, and use. And who makes these decisions? Each change to the built environment, whether through new construction or remodeling, requires a series of negotiations between different groups with disparate goals. Developers are interested in profit, architects pursue aesthetic ideals, engineers want reliable performance, and owners desire the American dream. Buildings are the tangible result of these negotiations, at particular points in time, realized by contractors with the currently available materials and skills. Even if some builders and owners are changing their practices, bringing these improvements to the industry as a whole is challenging, due to its highly decentralized and fragmented nature.

Even changing common practice in the construction industry is not enough, however, to ensure a sustainable future. Better use of resources is not in itself a sustainable path, as it is possible to use ever-greater absolute levels of resources in relatively more efficient and “green” ways. For example, a large new house may use energy efficiently and be constructed with healthy materials, but it will often consume more energy and resources than a smaller home. In the last three decades, the size of the average American home has climbed 46%, to say nothing of the proliferation of 2 and 3-car garages and the SUVs that fill them. These examples point to the need for “sufficiency”—the ability to break the spiral of material saturation that currently signifies affluence and well-being in our society. Creating sufficiency is not a technical problem to be handled solely by the construction industry or by building scientists: it is a social issue that requires interdisciplinary attention.

Questions about the form, nature, and distribution of buildings are of critical importance to a sustainable world, and no single discipline in science, social science, or the humanities can claim but a piece to the overall puzzle. A wide range of disciplines should be called upon to contribute to their resolution, as these changes will affect the firms that design and construct buildings; the people, organizations, and societies who buy, use, and require them; and the environment in which we all must live.

Ecological design is situated within a host of social and political systems that can enable, hinder, or even prevent change from being realized. Architects and building scientists cannot create this kind of social change alone. How can they leverage their efforts with other professions and disciplines to achieve more sustainable results, more of the time? How do clients and the general public learn about these results, and what kinds of communication strategies can be developed to spread the word about higher levels of

building performance? How can higher levels of ecological literacy assist in prospects for ecological design?

To begin to answer these questions, this essay focuses on the general need for ecological literacy with respect to building design. I use energy issues as the fulcrum of this essay, but a similar piece could be written about indoor air quality, urban planning, or material flows. Ecological building literacy requires an understanding of: building performance, the context and nature of energy systems (e.g., system load profiles and generation capacity issues), the relationship between energy use and socioeconomic class (e.g., fuel poverty), and the goals and limitations of energy policies. Building science and SBSE members support some of these ecological literacy needs, and other disciplines and practices provide insight into others. To supplement the expertise of SBSE members, this essay briefly reviews current academic work in environmental studies, sociology, management, and policy fields that pertain to building design. Based on the interest from other fields, I suggest that one of the opportunities for advancing the cause of ecological design lies in bridging disciplines and communicating results. This essay invites SBSE members to consider how ecological design education might reach beyond the level of the building to incorporate social and environmental systems.