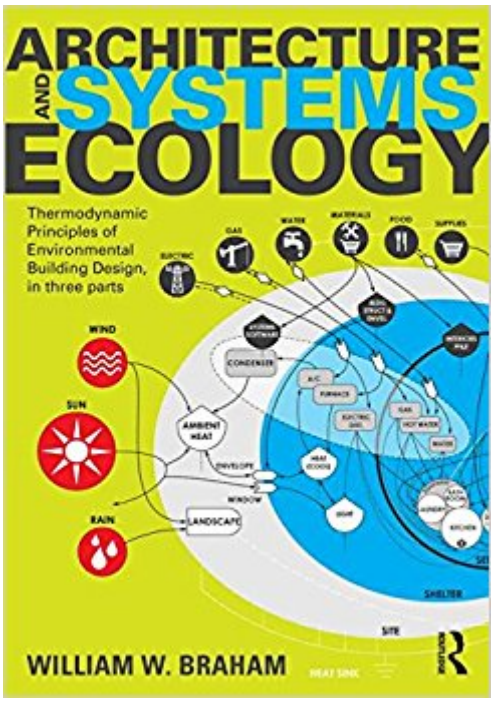
Architecture And Systems Ecology: Thermodynamic Principles Of Environmental Building Design, In Three Parts



Synopsis

Modern buildings are both wasteful machines that can be made more efficient and instruments of the massive, metropolitan system engendered by the power of high-quality fuels. A comprehensive method of environmental design must reconcile the techniques of efficient building design with the radical urban and economic reorganization that we face. Over the coming century, we will be challenged to return to the renewable resource base of the eighteenth-century city with the knowledge, technologies, and expectations of the twenty-first-century metropolis. This book explores the architectural implications of systems ecology, which extends the principles of thermodynamics from the nineteenth-century focus on more efficient machinery to the contemporary concern with the resilient self-organization of ecosystems. WrittenÃ Â with enough technical material to explain the methods, it does not include in-text equations or calculations, relying instead on the energy system diagrams to convey the argument. Architecture and Systems Ecology has minimal technical jargon and an emphasis on intelligible design conclusions, making it suitable for architecture students and professionals who are engaged with the fundamental issues faced by sustainable design. The energy systems language provides a holistic context for the many kinds of performance already evaluated in architectureÃ¢â ¬â ¢from energy use to material selection and even the choice of building style. It establishes the foundation for environmental principles of design that embrace the full complexity of our current situation. Architecture succeeds best when it helps shape, accommodate, and represent new ways of living together.

Book Information

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Customer Reviews

"In a context in which energy efficiency inexplicably and erroneously remains the sole architectural consideration of energy, Architecture and Systems Ecology is a superb, and necessary, contribution towards advancing the design and discourse of energy systems in architecture. From salient principles to their application, Braham provides a cogent explication of the latent power of the thermodynamics of building. These principles have yet to transform our collective modes of reasoning and imagination for energy systems, but soon will." - Kiel Moe, Harvard University Graduate School of Design, USA "Comprehensive and accessible, Architecture and Systems Ecology presents environmental building design as both a technical and a social challenge. With solid scientific foundations in thermodynamics and ecology, and understanding buildings as physical shelters, life settings and urban sites, this important book goes beyond energy efficiency to propose principles of sustainable construction for contemporary cities. If Vitruvius established firmitas, utilitas and venustas as the basis of sound architecture, Braham offers a new triad for the twenty-first century: shelter, setting and site." - Luis FernÃƒÂ¡ndez-Galiano, Int FRIBA, Professor of Architecture, Universidad PolitÃƒÂ©cnica de Madrid, Spain "Architecture and Systems Ecology presents a new and challenging perspective on the relationship of architecture and environment in the 21st century. The book skillfully embraces themes from the theory of thermodynamics, systems ecology and the humanities to construct a comprehensive strategy for action." - Dean Hawkes, Darwin College, University of Cambridge, UK "William Braham has produced a rare work of exceptional imaginative and scholarly integration. He effortlessly bridges the concepts of thermodynamics, systems ecology, building science, envelope performance, water supply, waste and waste water treatment and reuse, building material selection, transportation, environmental economics and urban spatial theory; giving a history of their formative principles by seminal authors. He has developed an ecological system for the built environment, using the concept of e(m)ergy (embodied energy) from systems ecology, as a more realistic form of environmental accounting to evaluate building performance across three scales of operation: shelter, setting and site. He has created, no less, a comprehensive framework for evaluating architectural design ideas that takes into account the full complexity of designing a more sustainable, self-organizing future. This is a must read for all serious environmentalists." - Harrison Fraker, Dean Emeritus and Professor of Architecture and Urban Design, College of Environmental Design, UC Berkeley, USA

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