Book review

Biophilic Design: The Theory, Science, and Practice of Bringing Buildings to Life

Stephen R. Kellert, Judith H. Heerwagen and Martin L. Mador (eds). Wiley, Hoboken, NJ, USA, 2008, ISBN 978 0 47016 334 4, £55, 385 pp.

Two stunning conclusions can be drawn from this definitive edited collection by leaders in the burgeoning field of 'biophilia' – a term referring to the evolutionary affinity for living forms and their characteristics. One is that we humans do indeed need certain precise characteristics in our buildings and cities in order to be healthy and happy – characteristics that may have more in common with our ancient evolutionary history than with our modern technological world.

In fact, without these characteristics, as several of the authors demonstrate, humans can be subject to a surprising range of maladies, from psychological disorders to stress-related physical diseases. There are also knock-on effects – for example, people who live in environments that are not appealing to pedestrians are likely to get significantly less exercise and social interaction.

The other surprising and possibly revolutionary conclusion is that these qualities are not mysterious, but can be discovered and shared through a reliable 'evidence-based approach' to design. It seems that medical science, with its demand for evidence of efficacy, is leading the way towards this new practice of 'evidence-based design.' From the obvious impacts of things such as number of beds and sources of physical transmission of pathogens, medical science has progressed to recognise many other environmental contributors to well-being in the patient environment, and in the larger urban environment too. Most recently, medical science has begun to make much broader discoveries that may transform best practice in architecture and urban design.

It is about time. As several of the authors argue, environmental design has suffered for too long from an ideological and *ex cathedra* approach to design, in which priest-like 'starchitects' invent fanciful theoretical and artistic regimes to explain their mesmerising designs. Their ideas seem plausible, but on thorough examination, have little real foundation in human experience or evolution, or in evidentiary methods. The insights of biophilia suggest that these theoretical approaches are at best incomplete, and at worst, significantly damaging to human well-being.

The book, divided into three sections (theory, scientific research and practice), takes the reader through the theoretical foundations of biophilia and the evidence-based methodology for its application, followed by a lucid discussion of scientific research, and finally by a series of case studies and

personal accounts of current practice. Almost all the chapters offer helpful notes and references, and several offer colour plates. The authors are legends in the field: lead editor Stephen Kellert is a long-time collaborator with the pioneering biologist E. O. Wilson, who also has a chapter in the book; and the connection to healthcare is explained by Roger Ulrich, famed researcher on aesthetics and health. Other familiar names are Howard Frumkin (on evidence-based urban design), Clare Cooper-Marcus and Richard Louv (on children and nature in cities), Nikos Salingaros (on recent findings from neuroscience) and Grant Hildebrand (on prospect and refuge).

Kellert's introductory chapter lays out the theoretical framework, dividing biophilia into six categories: environmental features (water, air, plants, animals etc.), natural shapes and forms (biomorphic forms, botanical motifs etc.), and natural patterns and processes (information richness, fractals etc); light and space (natural light, pools of light); place-based relationships (geographic features, historic features); and evolved human–nature relationships (order and complexity, prospect and refuge etc). This broad set of topics could perhaps benefit from theoretical condensation, but nonetheless indicates the richness of the topics encompassed by biophilic design.

The book has emerged as an important landmark in a field that is continuing to grow, and to dominate the thinking of many leading designers. One can regularly hear credits to biophilic design in the discussions of various avant-garde design regimes. This is surely a positive trend. But whether these designers have really taken to heart these evidence-based methods and their deeper implications – or whether they are only in the business of adding shrubbery to the same failing design ideas – remains to be seen. Certainly the ideas discussed herein do offer the tantalising suggestion that we can again achieve the powerful beauty and coherence of the greatest cities and buildings of history.

The broadest philosophical foundation for the book's central ideas is actually in the second chapter, by perhaps the most important biophilia pioneer, the biologist E. O. Wilson. He offers as a guiding principle the concept of 'consilience', or the unity of knowledge – meaning that we can tease out causes and effects from whatever disciplinary perspective, and make use of them to produce much better design. Indeed, the final words of his chapter may be the most fitting summary of the book's significance as a whole: 'If architecture and design are ever to become science as well as art, it will be through scholarship of the kind exemplified by the contributions to *Biophilic Design*'.

Michael Mehaffy