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Chapter 1 : Design with Climate Bioclimatic Approach to Architectural Regionalism | PDF Free Download

Design with Climate Bioclimatic Approach to Architectural Regionalism - New and expanded Edition Victor Olgyay With new essays by Donlyn Lyndon, Victor W. Olgyay, John Reynolds, & Ken Yeang.

Bioclimatic Approach to Architectural Regionalism, by Victor Olgyay, more than 50 years after its initial printing in *Design with Climate* describes an integrated design approach that remains a cornerstone of high performance architecture. He was a leading researcher on the relationship between architecture, climate, and energy. His son, Victor W. Olgyay, is an architect and principal at Rocky Mountain Institute and was instrumental in reissuing this book. Olgyay spoke to Molly Miller about *Design with Climate* then and now. Did *Design with Climate* change design when it came out in ? Our whole family moved to Colombia, South America, so my father could teach bioclimatic design there. He did research with his students using local climate zones and generated very interesting regional designs and published different versions of *Design with Climate* in Colombia and Argentina. This was in My father died on Earth Day, April 22, Soon afterwards the oil embargo began and energy became a serious topic. *Design with Climate* suddenly was adopted in dozens of schools of architecture in the US and became a popular textbook. The broad popularity of the book had to do with Earth Day and with the oil crisis, but in the architecture community it was seen as a keystone helping bridge the emerging environmental architecture movement and analytic regionalism. What is bioclimatic design? The physics of the environment, such as solar radiation and the convection of wind are employed as formal influences to create a climate balanced design. A diagram in the book shows four interlocking circles: The lines of the circles are soft multi-layered lines, emblematic of the riparian merging of these disciplines. Bioclimatic design takes these disciplines and considers them together. For me this is the approach of a polymath, where when you consider things from different worlds together, you learn something completely new. In this model, people are at the center of the diagram. Synthesizing these disciplines results in a superior architecture. On a more practical level, a large part of this book is devoted to a design process. What if climate informs the design? How can you work with nature and apply it to buildings? This process is shown in the book. He took fairly complicated data about climate and made it into manageable design steps. He advocated working with climate to reduce energy use by orientation, shading, natural ventilation etc. In one example, he used wind tunnels with smoke to visualize air currents. Seeing the air currents allows an architect to make adjustments in their design, perhaps slightly moving the edge of an overhang next to a building to optimize natural ventilation. How is this book relevant today? Today, more than ever, we have identified architecture as the cause and solution to a large percentage of our climate related problems. It is impossible for us to transition to a low carbon economy without reducing the energy consumption of buildings. To do that, we need to take into account bioclimatic design and *Design with Climate* shows us how to get that into our lexicon again. Integrated design has taken off. Today, we have a renaissance of people thinking about green design. Not only do we need to design with climate, we now have to design for a changing climate and address global issues with architecture. But even though we can say green design is becoming mainstream, the concepts in *Design with Climate* are still widely overlooked. Architects rarely recognize how a building affects people and the environment. That can make an inspired design! There are dire consequences to designing a glass box. This is the awareness that *Design with Climate* brings. Has this new edition of *Design with Climate* been changed or updated? As an existing book, it seemed classic and I wanted to honor that. So we reprinted the entire original manuscript exactly as it first appeared. But we added some essays to provide contemporary context. Donlyn Lyndon worked with my father on the original research. John Reynolds, professor emeritus at University of Oregon, has been teaching bioclimatic design for 40 years. Ken Yeang, who has been working with ecological design with tall buildings, brings *Design with Climate* into the 21st Century. These essays each add color and context and show how *Design with Climate* was a steppingstone to our contemporary architecture. What does this book mean to you personally and professionally? I have always

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been interested in the implications of architecture and form. Our work is important, and can have a positive impact in the world. I am very thankful that this book has had that influence. It is an honor for me to assist with this new edition, so this book endures as an inspiration for others to honor the earth, and to support the evolution of the human spirit.

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Chapter 2 : Architecture Books » Design with Climate : Bioclimatic Approach to Architectural Regionalism

Princeton University Press has reprinted an expanded edition of Design with Climate, Bioclimatic Approach to Architectural Regionalism, by Victor Olgay, more than 50 years after its initial printing in

Koenigsberger Lessons from Traditional Architecture: What is it about tropical resorts that make them so utterly enjoyable? Can you not close your eyes and easily picture your favorite sunny, beachy, vacation spot - do you not feel yourself awash in a balmy breeze, the coolness of the shade, the light filtering through louvers? Now, take a mental step back and think of really how hot and humid it is. If you were to close windows and doors, is it likely to be as pleasant? To get further into this scenario, take the exercise a step further and imagine your house in this place - would you have the same sensory experience? Would you be as comfortable? Probably not, unless you have a home that has been designed for a similar site, by someone who took you and your innate physiological and psychological comfort to heart. The critical factor in play is the level of thermal comfort that is achieved by designing according to location. The corollary to that is the inability of a building that is not contextually designed to satisfy comfort requirements of its inhabitants without total and excessive reliance on mechanical cooling. When a preference for individually adjustable building environments is demonstrated as shown in research by Gail Brager, Professor of Architecture, UC Berkeley, and Professor of Environmental and Life Sciences, Macquarie University, Sydney, it would behoove architects to incorporate, if not emphasize, climate-based design solutions. Thermal comfort is maintained when the body is in thermal equilibrium with its surroundings. Body Heat There are four mechanisms involved in the transfer of heat gains and losses in buildings and bodies that play a role in establishing thermal comfort. These need to be addressed in design, both in terms of how to avoid creating undesirable conditions and how to use them, passively, in a beneficial way. Conduction - The process of heat transfer through materials by direct molecular interaction. It is primarily dependent on air and surface temperatures. Heat transfer by conduction can be altered by materials selection conductance and insulation of surfaces exposed to solar energy. Through contact of two items, electric stove top element heats pot. Convection - The process of heat transfer by means of flowing and mixing motions in fluids liquids and gasses. It occurs when human skin is in contact with air or water. Warm air rises, mixes with other air in the space, and circulates. Radiation - The process of heat transfer through the air by electromagnetic waves from warmer objects to cooler ones. It is primarily dependent on surface temperature of materials. Solar radiation from the sun heats the earth without making contact. Evaporation - The process of heat transfer by physical transformation of material. It occurs only in one direction - where the body loses heat to the environment. It is primarily dependent on air and surface temperatures and air moisture content. Thermal comfort is, then, dependent on the balance between heat produced from the Building Heatbody; heat and radiation received by the body; and heat lost from the body through radiation, convection, evaporation, and, occasionally, conduction. Parameters that affect thermal comfort are thus separated into two main categories of influence - Environmental and Physiological - as follows: Environmental Influences Dry Bulb Temperature DBT - DBT is a prominent environmental factor as it is the controls heat dissipation by convection as the result of the relative difference between skin and air in contact with it. Excessively low or high RH creates discomfort. Air Speed Vel - Increases in Vel accelerates heat loss from skin to air through convection and promotes the rate of evaporative cooling. Physiological Influences Metabolic Rate Met - Met is the rate at which the body converts food into energy, or heat, which varies by individual, and is a function of activity level. Values for Met range from 0.8 to 1.2. Values for Clo range from between 0.5 and 0.7 for polar weather suits to 0. The latter two systems take mechanical methods into account and are now typically used in the design of HVAC systems. Click on images below to view examples of Comfort Zone Diagrams To utilize and interpret the BBCC, if a plotted point falls within the CZ, conditions are comfortable in the shade and in still air. If the point falls outside of the CZ, corrective measures are necessary to bring conditions into the CZ. If the point is to the left of the CZ,

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additional solar or surface radiation is needed. If the point is to the right of the CZ, additional air movement is needed. If the point is below the CZ, additional moisture is needed, and if above, dehumidifications is needed. These graphical presentation methods have been used with some success as general indicators of acceptable, comfortable conditions, but lack the precision required in all locations as a result of localized situations, cultural differences, etc. To better evaluate site- and building-specific cases, computer-based analytical and simulation programs have been developed. Some of these will be explored and used during this and subsequent phases of this project, and will be added as discussion items as they are encountered.

Chapter 3 : Design With Climate: Bioclimatic Approach to Architectural Regionalism | UVA Library | Virgo

Design for Climate, Bioclimatic Approach to Architecture Regionalism by Victor Olgyay originally published in /3 has been recently updated with new essays and insights on climate change and design.

Chapter 4 : Victor Olgyay: Design with Climate (PDF) - ebook download - english

Design with Climate is a refreshing reminder of what it means to not only know about a local climate, but to feel it. It's a bit like the difference between describing a radiant cooling system by its water temperature and airflow rate or saying that it is like the "cool breeze under the shade of a tree".

Chapter 5 : Thermal Comfort - archinology

Design With Climate: Bioclimatic Approach to Architectural Regionalism, Issue 1 VÃ-ctor Olgyay, Aladar Olgyay Princeton University Press, - Architecture - pages.

Chapter 6 : News â€™ Design with Climate

Architects today incorporate principles of sustainable design as a matter of necessity. But the challenge of unifying climate control and building functionality, of securing a managed environment within a natural setting--and combating the harsh forces of wind, water, and sun--presented a new set of.

Chapter 7 : Arquitetura bioclimÃ;tica â€™ WikipÃ©dia, a enciclopÃ©dia livre

Design with climate: bioclimatic approach to architectural regionalism: Some chapters based on cooperative research with Aladar Olgyay Victor Olgyay, AladÃ;r Olgyay Princeton University Press, - Architecture - pages.

Chapter 8 : Design With Climate: Bioclimatic Approach to Architectural Regionalism by Victor Olgyay

Victor Olgyay Architects today incorporate principles of sustainable design as a matter of necessity. But the challenge of unifying climate control and building functionality, of securing a managed environment within a natural setting--and combating the harsh forces of wind, water, and sun--presented a new set of obstacles to architects and engineers in the mid-twentieth century.

Chapter 9 : About Design with Climate â€™ Design with Climate

Design with Climate: Bioclimatic Approach to Architectural Regionalism Architectural Regionalism: Collected Writings on Place, Identity, Modernity, and Tradition Climate: Causes and Effects of Climate Change Climate and the Oceans (Princeton Primers in Climate) The Climate Crisis: An.