The Science & Art of Daylighting Design

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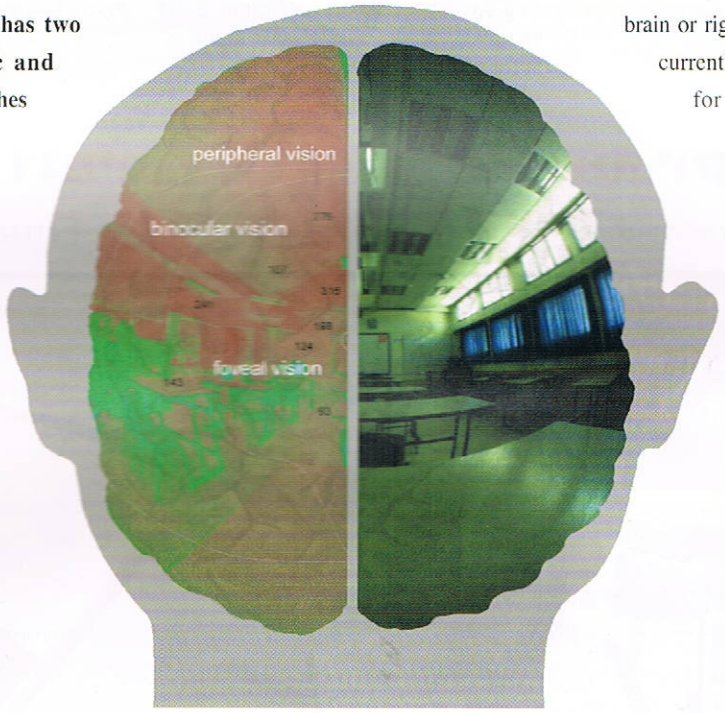
The design of daylighting has two main approaches: scientific and artistic. Although both approaches are essential for designing buildings which provide quality daylighting, these are rarely met on a single architectural project.



The scientific approach is focused, systematic, problem oriented, and analytical (using logical reasoning). It consists of a linear analysis process (from problem to solution), and its objective is revealing the truth. It requires understanding abstract information and working with numbers, graphs, and simulations.

The artistic approach is holistic, solution oriented, and often uses analogical reasoning (such as using similarity to another design, modifying features of an existing design, or combining features from existing designs into a new combination). It consists of an oscillating synthesis process (solution to problem and vice versa) and its objective is making and inventing. In fact, it is considered a good mean to invoke creativity. It requires understanding forms and working with sketches (searching for solutions and problems at the same time);

While the scientific approach is commonly carried out by engineers and researchers, the artistic approach is commonly carried out by architects, designers, and artists. Engineering and architectural processes are both part of the design realm. However, it is possible to recognize some significant differences in their design process: there is a difference between the thinking of most architects and most engineers (Lawson, 2011), "Architects and engineers do not speak the same language" (Battle, 2009).

It appears that the two approaches, scientific and artistic, are so fundamentally different, making it difficult for a single designer to master both: usually a single designer has a dominate orientation, either scientific or artistic (left brain or right brain domination). In addition, currently there is no clear methodology for integrating both approaches in a single design process, rather than executing them separately, side by side, along the design process. Such approach may require a team of at least two designers (such as architects and engineers), one responsible for the scientific process and the other for the artistic process, and a very good communication between them. Since both approaches have valuable measures, "a combination of science thinking and design thinking is better than either alone as a source of advice" (Owen, 2007). Better integration between the two approaches, scientific and artistic, may produce surprising quality of daylighting design and innovation.

References:

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Owen, C. (2007). Design thinking: Notes on its nature and use. Design Research Quarterly, 2(1), 16-27.