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Light Nature Architecture
A Guide to Holistic Lighting Design

Ulrike Brandi

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The phenomenon of light is deeply integrated into quotidian reality and often not consciously perceived. In her book "Light Nature Architecture – A Guide to Holistic Lighting Design" author Ulrike Brandi presents authoritative discourse on the profound integration of natural light within architectural landscapes. In her work as a practician and member of interdisciplinary teams Ulrike Brandi is focused on diverse architectural strategies to obtain sustainable compositions and atmospheres in creating the poetry of light. The author's insightful approach arises from more than 1300 projects and transcends conventional paradigms, offering a sophisticated understanding of how light can be harnessed as an integral element in architectural design. The book also refers to new findings from other disciplines such as neurology, medicine, biology, and environmental protection and incorporates them in holistic lighting design. Through ten book chapters (Nature, Evolution, Perception, Culture, Sustainability, Health, Darkness, Dynamics, Composition, Atmosphere/Magic) the author examines and systematically describes the multifaced impact of natural light on various dimensions of the built environment. Each chapter is focused on a specific lighting project and precisely structured into five subchapters (*Introduction*, *Phenomena*, *Background Knowledge*, *Practical Knowledge*, and *Implementation*). The photo material is carefully selected to demonstrate the light atmosphere of each project. Book chapters are individually formed and allow random reading order.

Nature – The author describes the specific nature and distinctive characteristics of daylight using the terms of distribution and diffusion, spectrum and colour rendering, illumination levels, sun positions and daylight factors in simple vocabulary, diagrams, and basic physical models. European standards and criteria regarding indoor daylighting are presented together with recommendations for openings positions to obtain an outward view.

Evolution – The subchapter focuses on specific light reception variations among living organisms as the results of a long evolution process strongly affected by the alteration of night and day. The author describes the development and the structure of visual functionality of the human eye, as well as tools and equipment that significantly help in the improvement of the light observing process.

Perception is, together with lighting and space, one of the key elements of the holistic lighting concept. A crucial part of spatial perception is the information processing between the eye and the brain. Ulrike Brandi defines neurological and psychological aspects of perception. The integration of experience into the seen image helps in creating specific lighting atmospheres and optical illusions. The author also points out shade as an essential part of spatial perception.

Culture – In this subchapter, the author describes culturally developed visual habits. Europeans, for example, often neglect immaterial and spiritual aspect of light: the light source characteristics are more important to them than the created atmosphere. Diverse cultural backgrounds result in various preferences with a clear example being the inclination toward either warm or cold light based on the geographical latitude of a particular culture. Besides latitude, colours of the landscape and its natural materials determine the culturally defined light preferences.

Sustainability (in lighting design) is a result of interaction and consideration of ecological, economic, and social aspects of culture. Ulrike Brandi emphasizes the importance of life cycle management of implemented lighting strategies. Generous and ideal application of daylight is at the heart of sustainable lighting design.

Health – Light has a great visual and nonvisual effect on people's health and is one of the key elements of the circadian rhythm. All biological processes are adjusted to this rhythm. Internal oscillating clocks are adjusted daily thanks to exposure to natural light of sunrise and sunset.

Darkness – By analysing and describing different aspects of light in architecture, the author emphasizes the importance of exposure to the alternating rhythm of intense shining light during the day and darkness at night. The darkness exposure is just as important as light exposure. Light pollution presents a rising concern in terms of indistinct star sky view.

Dynamics – Ulrike Brandi underlines the importance of adjustability and flexibility of lighting conditions. The introduction of lighting systems control enables adaptation to various requirements (often in terms of ergonomics). Also, adjustable lighting affects psychological condition and consequently creates specific atmosphere or space accent. Additionally, light system control is crucial in energy saving promotion and light pollution reduction.

Composition – The choice of lighting instruments and their characteristics plays a crucial role in composition realization. Light compositions can encourage communication, promote privacy, emphasize hierarchy, or line out certain architectural sensation.

Atmosphere/Magic – An interdisciplinary collaboration of architects, designers and craftspeople guided by clients' preferences and requirements in lighting design can significantly improve the space atmosphere. The author highlights that factors such as the specific height of light points, the colour temperature of white light, and the arrangement of luminaires can significantly influence the perception of security or spaciousness in both indoor and outdoor spaces. For instance, a high-standing sun in a bright sky suggests an energizing atmosphere, contrasting with the low evening sun or the warm glow of a campfire.

The presented case studies (Trident Park Malta, Elbphilharmonie Hamburg, Amsterdam Holocaust Memorial of Names, Oldenburg State Theater, Elmshorn Control Center, ICE 4 Train, Mall of the Netherlands, Rotterdam Centraal Station, London Royal Academy of Music) provide a granular analysis of the intricate interconnections between light, nature, and architecture. This comprehensive work sheds light on the interplay between environmental luminosity, architectural form, and human experience. A glossary and further reading suggestions present a valuable source of additional information at the end of the book. By aligning theoretical insights with practical applications, this book emerges as a seminal guide for architects, designers, and enthusiasts seeking an enlightened approach to lighting design.