- 7 Preface by Ian Ritchie
- 8 Introduction

#### **NATURE**

- 10 Learning from Nature: Understanding and Integrating Daylight
- 12 Phenomena: The Illumination of the Daytime Sky
- 14 Background: The Special Nature of Daylight
- 16 Practical Knowledge: Illumination Levels, Sun Positions, Daylight Factors
- 22 Implementation: Daylight and Artificial Light at Trident Park, Malta

### **EVOLUTION**

- 24 Evolution and Innovation: The Development of the Eye
- 26 Phenomena: How Do Gleam and Sparkle Occur?
- 27 Background: Development and Structure of the Human Eye
- 30 Practical Knowledge: Observation, Experimentation, and Design of Light: A Design Methodology
- 34 Implementation: Variants of a Light Theme at the Elbphilharmonie Hamburg

# **PERCEPTION**

- 36 Three Things Pertain to Good Lighting: Lighting, Space, Perception
- 38 Phenomena: How Are Shadows Formed?
- 40 Background: The Interplay of Eye and Brain: Neurological and Psychological Aspects of Perception
- 43 Practical Knowledge: The Art of Highlighting or Leaving in the Dark
- 46 Implementation: Open Safe Havens: Light and Space at the Dutch Holocaust Memorial of Names, Amsterdam



# **CULTURE**

- 48 Seeing the Light rather than the Luminaire
- 50 Phenomena: What Is the Halo Effect?
- 52 Background: How Lighting Preferences Develop within Various Cultures
- 57 Practical Knowledge: Heeding the Location and Listening to Its Users
- 60 Implementation: Differentiated Lighting Intentions on the Elbphilharmonie Plaza, Hamburg

#### SUSTAINABILITY

- 62 The Art of Choosing the Right Light Source
- 64 Phenomena: How Artificial Light Is Created: Thermal Radiators, Discharge Lamps, Chemical Light Generation
- 66 Background Knowledge: Sustainability Comprises Ecological, Economical, and Social Aspects
- 70 Practical Knowledge: How to Plan with Sustainable Light
- 76 Implementation: The Shop Window Facing Outward: Oldenburg State Theater

## **HEALTH**

- 78 The Biological Effect of Light
- 80 Phenomena: Semitransparency and Opacity: A Ping Pong of Light
- 82 Background: How Does Inner Clock Work?
- 85 Practical Knowledge: Healthy Light for Living and Working
- 88 Implementation: How Good Lighting Helps Staying Healthy: Continuous Operation and Shift Duty at Elmshorn Control Center

### **DARKNESS**

- 90 How Much Light Is Too Much?
- 92 Phenomena: How Does the Aurora Borealis Occur?
- 94 Background Knowledge: We Need Shade during the Day and Darkness at Night
- 99 Practical Knowledge: Light Pollution and Lurking Dangers:Designing Darkness Using Lighting Master Plans
- 104 Implementation: Low Light Emission as a Concept:Mall of the Netherlands, Leidschendam

#### **DYNAMICS**

- 106 Controlling and Dimming Light Scenes
- 108 Phenomena: The Vibrant Sky: Wavelengths in White Sunlight
- 110 Background Knowledge: Why Control Light?
- 112 Practical Knowledge: Light Scenes, Integrated Circuits, and Control Charts: A Playground for Technophiles
- 116 Implementation: The Sky Is Aboard: Daylight Moods on the ICE 4 Train

# COMPOSITION

- 118 It's All in the Mix
- 120 Phenomena: Absorption, Refection, and Transmission
- 122 Background Knowledge: Variation Stimulates Light Preferences
- 126 Practical Knowledge: Choice of Lighting Instruments
- 128 Implementation: Multifunctional as if in a Living Room: The Light at Centraal Station, Rotterdam

# ATMOSPHERE, MAGIC

- 130 Making the Immaterial Tangible
- 132 Phenomena: Expansion of Light in Time and Space
- 135 Background Knowledge: Magic: When Space, Light, and Emotions Are in Balance
- 137 Practical Knowledge: Security, Curiosity, Tranquility:
  Light Concepts and Collective Emotional Fundamental Experiences
- 140 Implementation: Two Poles of the Atmosphere: The Royal Academy of Music, London

- 142 Acknowledgements
- 144 Glossary
- 156 **Biography**
- 158 Catalogue raisonné
- 159 Further Reading