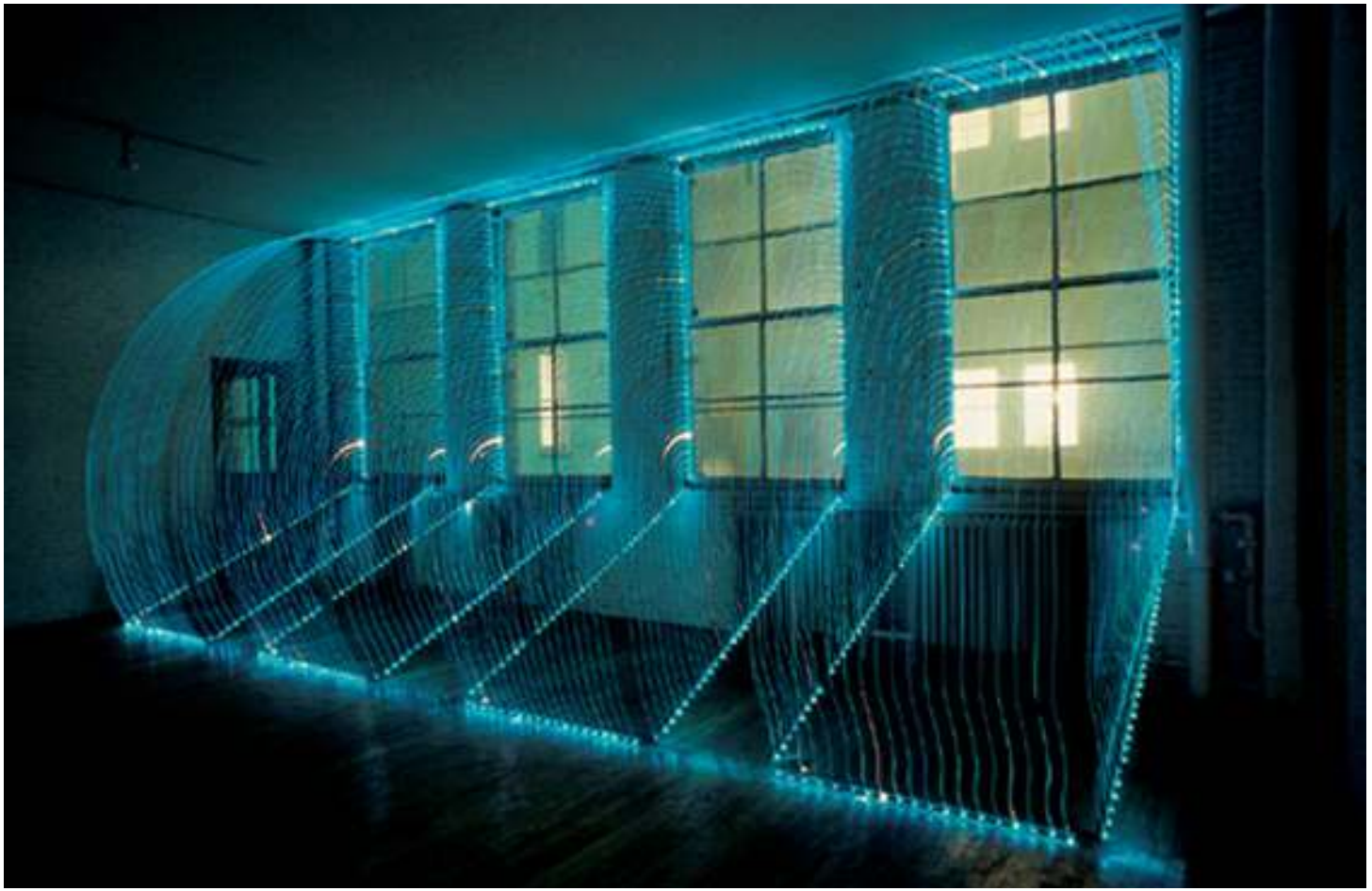
FORM AND FUNCTION IN HARMONY

LIGHTING THE INTERIOR

- Light has the ability to transform a space, revealing all of the structure to its best advantage, and is perfectly demonstrated when the expertise of the architect, the interior designer, the lighting designer and the building services engineer work together to create something special.

- We have evolved under daylight and we feel very comfortable under these conditions. So this should always be our starting point.

THE PATTERN OF DAYLIGHT



How does the interior change?

VISUAL INTEREST

There are not many shadows from a diffuse source

ADD CONTRAST

Light and shade make it more interesting

Does this need to be modified if we are to work in the space or spend a lot of time there?

- All of these questions are fundamental elements of lighting design and have always been considered, but sometimes we get side tracked by the latest legislation or new technology.

- The new LG7 tries to reconnect with the basic design principles and steer us away from a prescriptive solution, however we do have to have guidelines and some common standards to ensure all buildings are lit to the required level. But it should not end there – this is the minimum we want from a design.

LET'S START WITH SURFACES

- LG7 encourages us to use fairly reflective surfaces
  - Colour
  - Texture
  - not forgetting carpets

REVEALING TEXTURE - GRAZING LIGHT

GRAZING LIGHT

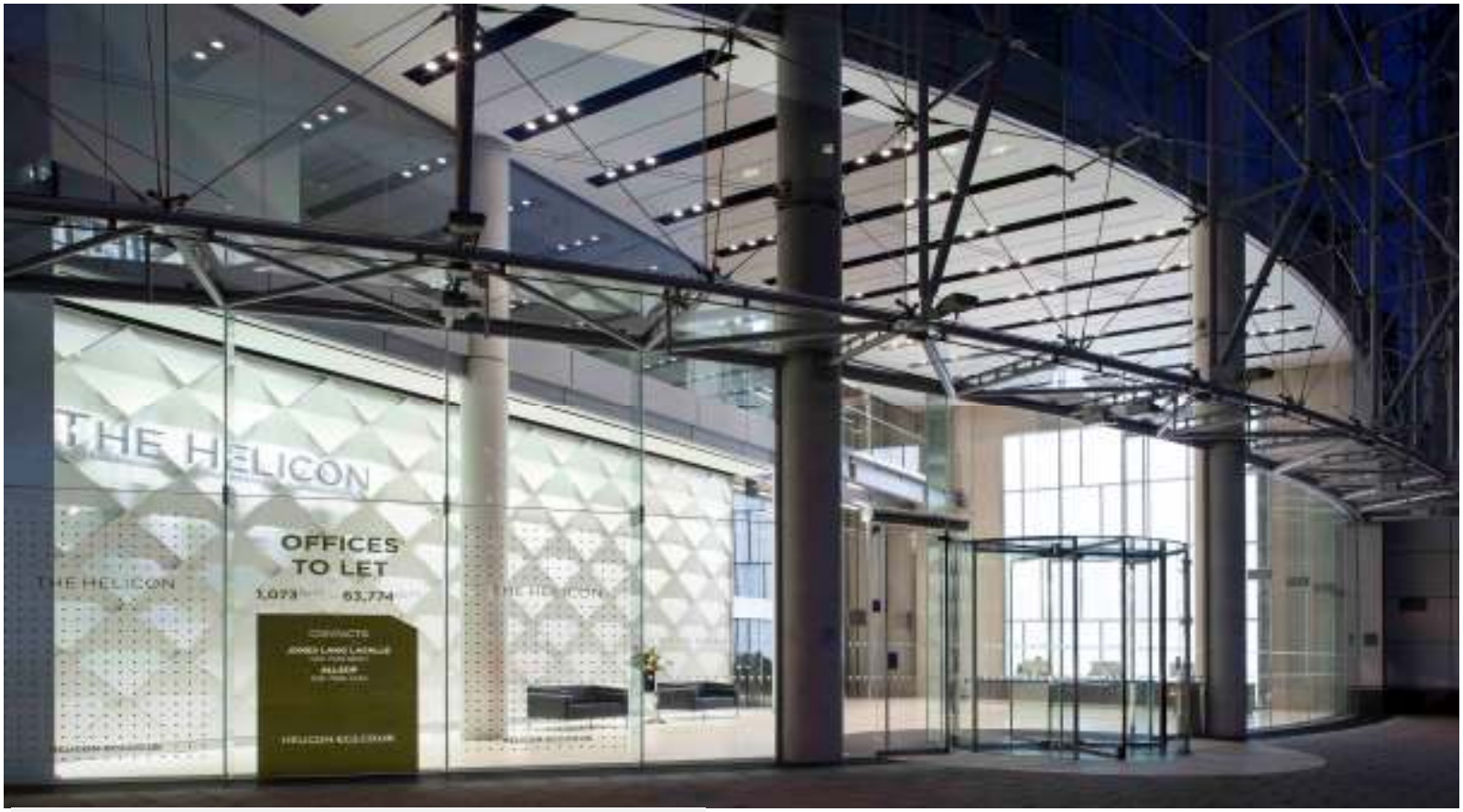
GRAZING LIGHT

WE CAN BORROW FROM THE RETAIL SECTOR

Spar – Middelburg, South Africa

THIS CAN BE USEFUL TO CREATE A CORPORATE IMAGE IN RECEPTIONS

Hoare Lea Lighting – Helicon Building



Hoare Lea Lighting – Helicon Building

Hoare Lea Lighting – Fenchurch Place

One Eighty Light – Imperial Tobacco

One Eighty Light – Imperial Tobacco

Tobias-Link-Lichtplannung

Hoare Lea Lighting – Western Transit Shed

GIA Equation – Skype HQ

- The new LG7 focuses on the principles of using light only when and where it is needed.

- But then we have to think about the resultant dark spaces.

Traverso-Vighy-Architetti

Arup_- Silo 2 Rothuizen

Isometrix Lighting Design – Trinity Golf Club, Korea

Tobias-Link-Lichtplanung

- How can we provide the long distance view?

- Again the guide often mentions the purpose of this to relax the eyes and to avoid strain.

WE CAN BORROW FROM THE RETAIL SECTOR AGAIN

Oktalite – Jelmoli Zürich Interstore

Hoare Lea Lighting – Western Transit Shed

TRILUX Lateralo - Besprechungsraum

- The biggest message in the new guide is encouraging early collaboration between the design team.

  - Architect
  - Interior Designer
  - Lighting Designer
  - Electrical Consultant

FOLLOWING THE ARCHITECTURE

IBM

One Eighty Light – Imperial Tobacco

Aecom Lighting

Maurice Brill Lighting Design

- Accent light can have one of the biggest impacts on a space and becomes more important if we are using the principles of only lighting where it is needed.

- The question of where it is needed is important.

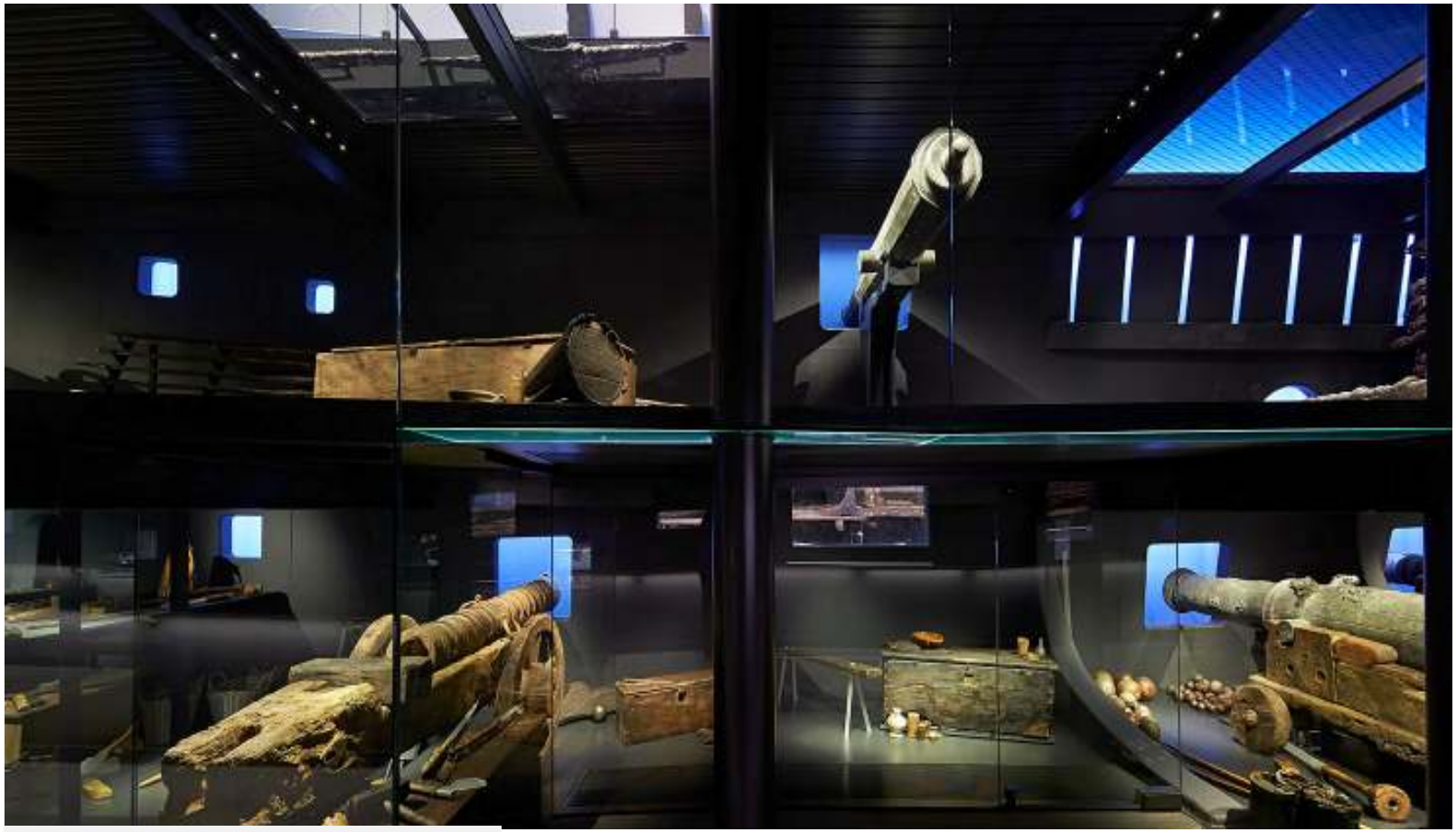
ACCENT LIGHT IS USED EXTENSIVELY IN RETAIL

Oktalite – Leffers Intersport

IN CULTURAL BUILDINGS

Sutton-Vane-Associates - Keble_Mosaics

AND MUSEUMS



DHA Designs – Mary Rose

CREATE SPACES WITHIN SPACES

Speirs + Major – Maggies, Newcastle, James Newton

ChapmanBDSP – 19 Savills Margaret Street

CREATE MOOD

- Early collaboration is essential if we are to make any changes to the traditional building model.

- The biggest challenge is with spec office buildings.

13 Practical examples of design approach

13.1 Introduction

This section of the guide is intended to help the reader in determining the type of lighting design most appropriate to a given situation.

The examples discussed should not be taken as exemplar designs and are not intended for use as reference points for any particular type of office.

The intention is to give an indication of how lighting could be provided in a number of scenarios, bearing in mind the fact that each office will have to be considered against specific client requirements. The advantages and disadvantages of different office plans and decor are discussed.

13.2 Example 1 – large open-plan office with known furniture layout

This example considers an open-plan office with full-height windows on the north and south sides (Figure 13.1). The desk layout is regular and surfaces are known to be:

- east and west walls – a pale matt-finish cream colour
- ceiling – white matt-finish ceiling tiles
- floor – light grey carpet
- blinds – a pale matt finish to match the walls
- desks – a beech-effect wood finish.

The ceiling height is typical of modern offices at around 2.8 m.

The room dimensions are approximately 16 × 22 m.

The occupants work at their desks for 8 hours a day, taking the usual breaks. They work entirely on desktop computers and telephones.

Some informal seating is provided along the centre of the room.

There are two approaches that could be applied to this office. The first is to consider a lighting design that provides a general illumination across the space, suitable for carrying out the expected tasks. As the office has a deep-plan configuration, the lighting level in the centre will need to be higher than by

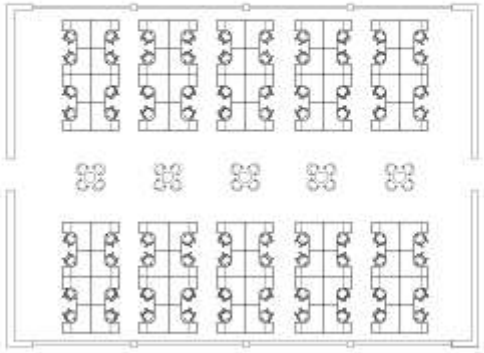
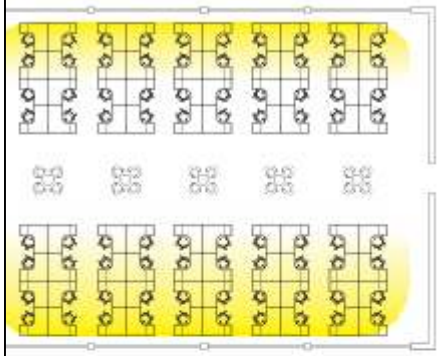


Figure 13.1 Open-plan office with windows on both north and south facades



…hows. In addition, and because of the fully glazed south-facing wall, the …g will need to be carefully controlled so as to provide a reasonably uniform …ross the space in response to changing levels of natural light and to make …t use of that natural light during the daytime.

…13.2 shows the typical effect of daylight on the office. The desks adjacent …south-facing window (bottom of the diagram) will gain the most benefit. …llow-shaded areas are likely to benefit from reduced levels of artificial …ation during the day. Appropriate lighting controls will allow the …res adjacent to the windows to be dimmed, depending on the amount of …ight available.

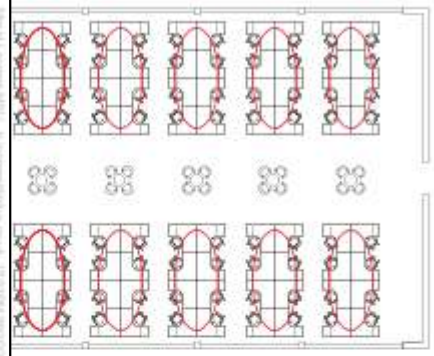
…the south facade is likely to benefit more from daylight contribution, it …ed some form of permanent shading, given the extent of glazing and the …al contrast issues this could present.

…ffice layout is common in the UK, particularly if the occupiers wish to …in some flexibility over how their office is laid out. It can, however, result …over-lighting of areas in which no tasks are being carried out.

…ond approach is to consider the task areas and provide a suitable level …ination for the specific task being carried out. The adjacent areas and …ion spaces can then be considered separately.

…13.3 shows the task areas highlighted. It can be seen that the actual task …y represents around 25% of the space. Illuminating this area to the agreed …e a given task will allow a level one step lower to be provided to areas …t and a further step reduction for circulation areas. The central circulation …effectively deep plan and therefore it may be worth illuminating this area …levels during the day and allowing a control system to reduce them to the …ion level during the hours of darkness.

…rniture layout of the office was unknown at the point when the lighting …had to be carried out, some reasonable assumptions could be made during …ions with the building owner. The north and south windows should allow a …of daylight control to be incorporated, even if the intention was to provide …ellular offices along either facade in the future. The open-plan space is



…regardless of the furniture layout and therefore the facility to provide …vels of illumination during the daytime should still be considered.

…Cat A speculative office design is required with a design that includes …ing to floor boxes, it would be worth raising with the building owner the …installing additional data cables to each floor box to support the use of …lighting driven by a 'Power over Ethernet' system. Any future tenant …en have the option to install a localised lighting design – something that …ously been difficult to include in the design in speculative developments.

…general and localised approaches to illumination have to address the …ovide illumination of walls and ceilings. This can be done either by …lighting the surfaces or by using spill light from the luminaires used to …e task and circulation areas.

…xample has a ceiling height of 2.8 m, the use of suspended luminaires …plight component could be considered as they would contribute to the …ion of walls and ceilings as well as helping to achieve an acceptable …s.

…d to provide adequate vertical illumination not only to the walls but …e faces of people occupying the office has to be addressed. Cylindrical …ce for this type of office should be between 30% and 60% of the lighting …sk area, depending on the specific needs of the office. There is no …ent to provide this level of cylindrical illuminance to the whole office …wever.

…he general lighting approach is easier to design and does not rely on …wledge about desk positions. It does, however, use energy to illuminate … adjacent to desks and to circulation areas, which is effectively wasted. …lised approach minimises the use of energy, which will help in meeting …gly challenging energy targets, although it will require careful thought …o provide a suitable level of cylindrical, wall and ceiling illuminance.

COLOUR APPEARANCE AND COLOUR RENDERING

‘It is a popular misconception that the colour temperature of a lamp and its CRI are directly related.

Simply using lamps that mimic the colour of daylight will not necessarily provide an acceptable level of colour correctness (colour rendering).

Reflected light from coloured wall, ceilings, floors, furniture and equipment will all affect the colour rendering.‘

COLOUR APPEARANCE AND COLOUR RENDERING

- Colour appearance (or colour temperature) is the easy bit.
  - There isn't a right or wrong
  - We can use it for different times of day
  - Or to differentiate spaces

COLOUR TEMPERATURE - AS SEEN IN RETAIL

Oktalite – Center Lustfeld, Nienburg

Oktalite – Edeka Niemerszein, Hamburg

Oktalite – Edeka Brueggendick-Braunlage

ChapmanBDSP – 19 Savills Margaret Street

ChapmanBDSP – 19 Savills Margaret Street

ChapmanBDSP – 19 Savills Margaret Street

COLOUR RENDERING

- Good colour rendering is much harder to see.
- The light source should have a full spectrum with equal weight given to each wavelength i.e. colour.
- The ideal is daylight, however we subconsciously adjust to different light sources, and sometimes this is appropriate – think of candle light!
- Colour rendering is also much harder to document.

REDS

•CRI is now getting a bit out of date and has fundamental flaws by using the average of only 8 colours. Ra_8

•R1 to R8 does not include a true red

•R9 is saturated red

•New methods include all 14 test colours , Colour Quality Scale and TM-30