It is inadequate simply to portray the eye as an optical system when describing human perception. It also needs to be explained how the image is interpreted. Both the perceptual psychology and the objects of perception are important factors in understanding lighting design.
Right up until the 18th century people only had two light sources at their disposal: natural daylight and the flame – the latter being the only artificial light source since the Stone Age. These two types of lighting dictated the patterns of life and architecture down through the ages, but a new epoch was ushered in with the invention of gas lighting and then electric lighting.
With the advent of electrical lighting, obtaining illuminance levels similar to those of daylight became a question of how much technical effort one was prepared to invest. At the end of the 19th century, one attempt at providing street lighting was to mount floodlights on lighting towers. However, the glare and harsh shadow produced caused more disadvantages than advantages and so this form of outdoor lighting was soon abandoned.

Whereas inadequate light sources were the main problem initially, a prime concern later on was how to sensibly deal with the overabundance of light. Increasing industrialisation gave rise to intensive studies in the field of workplace lighting, investigating the influence of illuminance levels and lighting type on production efficiency. The studies resulted in extensive rules and regulations governing the minimum illuminance levels, the qualities of colour rendition and glare limitation. This catalogue of standards was to serve as a guideline for lighting far beyond the area of the workplace; in fact, it still determines the practice of lighting design right up to the present day. However, this approach left the psychology of perception totally unconsidered. The issues of how people perceive structures clearly and how lighting also conveys an aesthetic effect were beyond the scope of the quantitative lighting rules and regulations.

The American Electric Light Tower
(San José 1885)
Restricting the view of human perception to a physiologically orientated level led to unsatisfactory lighting concepts. Approaches at a new lighting philosophy that no longer solely considered quantitative aspects arose in the USA after World War II. Expanding the physiology of the visual apparatus by adding the psychology of perception meant that all factors involved in the interaction between the perceiving observer, the object viewed and the facilitating medium of light now came under consideration. The perception-orientated lighting design no longer primarily thought in the quantitative terms of illuminance levels or luminance distribution, but in terms of the qualitative factors.
The perception-orientated lighting design of the 1960s no longer considered man and his needs as a mere recipient of his visual surroundings but as an active factor in the perception process. The designers analysed what was the significance of the individual areas and functions. Using the pattern of meaning thus established, it was then possible to plan the lighting as a third factor and to develop an appropriate lighting design. This required qualitative criteria and a corresponding vocabulary, which in turn allowed both the requirements placed on a lighting system and the functions of the light to be described.
Richard Kelly (1910-1977) was a pioneer of qualitative lighting design who borrowed existing ideas from perception psychology and theatrical lighting and combined them into a uniform concept. Kelly broke away from the rigid constraints of using uniform illuminance as the central criterium of the lighting design. He replaced the question of lighting quantity with the question of individual qualities of light. These were designed according to a series of lighting functions, which were in turn geared towards the perceiving observer. In the 1950s Kelly made a distinction here between three basic functions: ambient luminescence, focal glow and play of brilliants.
**Ambient luminescence**
Kelly called the first and foundational form of light "ambient luminescence". This is the element of light that provides general illumination of the surroundings; it ensures that the surrounding space, its objects and the people there are visible. This form of lighting facilitates general orientation and activity. Its universal and uniform orientation means that it largely follows along the same lines as quantitative lighting design, except that ambient luminescence is not the final objective but just the foundation for a more comprehensive lighting design. The aim is not to produce blanket illumination, or "one size fits all" lighting at the supposed optimum illuminance level, but to have differentiated lighting that builds on the base layer of the ambient light.

**Focal glow**
To arrive at a differentiation, Kelly came up with a second form of light, which he referred to as "focal glow". This is where light is first given the express task of actively helping to convey information. The fact that brightly lit areas automatically draw our attention now comes into consideration. By using a suitable brightness distribution it is possible to order the wealth of information contained in an environment. Areas containing essential information can be emphasised by accented lighting, whereas secondary or distracting information can be toned down by applying a lower lighting level. This facilitates a fast and accurate flow of information, whereby the visual environment is easily recognised in terms of its structures and the significance of the objects it contains. This applies just as equally to orientation within the space (e.g. the ability to distinguish quickly between a main entrance and a side door) as for emphasising certain objects, such as when presenting goods for sale or when highlighting the most valuable sculpture in a collection.

**Play of brilliants**
The third form of light, "play of brilliants", results from the insight that light not only draws our attention to information, but can also represent information in and of itself. This applies above all to the specular effects that point light sources can produce on reflective or refractive materials. Furthermore, the light source itself can also be considered to be brilliant. This "play of brilliants" can add life and ambiance, especially to prestigious venues. What was traditionally produced by chandeliers and candlelight can now be achieved in a modern lighting design by the targeted use of light sculptures or by creating brilliant effects on illuminated materials.
Glass House

Architect: Philip Johnson

It was on this Glass House project that Kelly developed the basic principles of indoor and outdoor lighting which he was to later apply to countless residential and business properties. Kelly avoided the use of blinds for the sunlight because he found they obscured the view and impaired the feeling of distant space. Instead, to reduce the harsh daytime brightness contrast between inside and outside, Kelly used dimmed lighting on the interior walls. For the night, he designed a concept that works with the reflection of the glass facade and retains the spatial feeling. Kelly recommended candles for the interior as this would give sparkle and add an exciting atmosphere. Several lighting components in the outdoor area augment the view out of the living area and create spatial depth. Projectors on the roof illuminate the front lawn and the trees beside the house. Additional projectors highlight the trees in the middle ground and the background, thereby making the landscape backdrop visible.

Photos courtesy of the Kelly Collection.

Seagram Building

Architects: Ludwig Mies van der Rohe and Philip Johnson
Location: New York, New York, 1957

The vision behind the Seagram Building was to have a tower of light that would be recognisable from afar. Working together with Mies van der Rohe and Philip Johnson, Kelly achieved this aim by having the building shine from the inside out. This was done using luminous ceilings in the office levels, whereby a two-stage light switch for the fluorescent lamps enabled energy to be saved at night. The illuminated area at the plinth of the building gave the impression that this multi-storey building is floating above the street. An impressive view into the building at night is afforded thanks to uniform vertical illumination of the building’s core, produced by recessed ceiling luminaires. A carpet of light starts in the indoor area and continues onto the forecourt. To achieve a uniform pattern of solar protection on the facade during the daytime, the blinds on the windows only have three settings: open, closed and half-open.
New York State Theater

Lincoln Center for the Performing Arts  
Architect: Philip Johnson  
Location: New York, New York, 1965

For the New York State Theater, Kelly explored the use of crystal-line structures for the design of the chandelier in the auditorium and the lighting of the balcony balustrades in the foyer. The chandelier in the auditorium had a diameter of about three meters and consisted of a number of smaller “diamonds of light”. In the foyer, the luminaires on the balustrade were designed to look like jewels in a crown, thereby underlining the grandeur of the room. The light sources were shielded towards the front side of the balustrades, but on the inside their multi-facetted structure produced impressive reflections. This results in brilliance effects comparable with the sparkle of precious stones. In addition, Kelly also conceived the lighting in all the other areas of the Lincoln Center, except the interior of the Metropolitan Opera House.

Kimbell Art Museum

Architect: Louis I. Kahn  
Location: Fort Worth, Texas, 1972

The clever use of natural light in the Kimbell Art Museum originates from the teamwork of Louis Kahn and Richard Kelly. Kahn designed a series of North-South orientated galleries whose vaulted ceilings featured a skylight running along their apexes, while Kelly was responsible for the daylight reflector system made of curved aluminium plate. Perforations allow daylight to penetrate through this plate, thereby reducing the contrast between the underside of this reflector and the daylight-illuminated concrete vaulting. The central section of this dished aluminium is kept free of perforations so that direct daylight is shut out. In areas with no UV protection requirements, such as the entrance or the restaurant, a completely perforated reflector is used. Computer programs were used to calculate the reflector contour and the lighting properties that were to be expected. The underside of the daylight reflector system was fitted with tracks and spotlights. Kelly suggested putting plants in the inner courtyards in order to tone down the harsh daylight for the indoor areas.
Yale Center For British Art

Architect: Louis I. Kahn

Louis Kahn teamed up with Kelly to design a system of skylights for the illumination in the Yale Center for British Art. The design brief from the museum was that on sunny and overcast days the pictures were to be exclusively illuminated by daylight. Artificial lighting was only to be mixed in when there was very low daylight. The domed skylights feature a permanently mounted louvre construction on the topside, allowing diffuse northern light into the building while avoiding directly incident light on walls or floors when the sun is high. The skylights are made of an upper Plexiglas dome with UV-protection and a sandwich construction consisting of: a translucent plastic plate for dust protection, a mirror-finish light diffuser and a bi-laminar, acrylic, prismatic lens underneath. Tracks on the undersides of the domed skylights hold wallwashers and spotlights. The design process utilised computer calculations and full-scale models.
In the 1970s, William M. C. Lam (1924-), one of the most committed advocates of qualitatively orientated lighting design, produced a list of criteria, or rather a systematic, context-orientated vocabulary for describing the requirements placed on a lighting system. Lam distinguished between two main groups of criteria: the "activity needs", which are the needs resulting from performing activities within a visual environment, and the "biological needs", which sum up the psychological demands placed on a visual environment and are applicable in every context.
Activity needs
The "activity needs" describe the needs resulting from performing activities within a visual environment. The characteristics of the visual task at hand are the crucial factor for these needs. The analysis of the activity needs is therefore largely identical with the criteria for quantitative lighting. There is also considerable agreement for this area when it comes to the objectives of lighting design. The aim is to arrive at a functional lighting that will provide the optimum visual conditions for the activity in question – be it work, leisure activities or simply moving through the space. In contrast to the proponents of quantitative lighting design, Lam objects to a uniform lighting that is simply designed to suit whatever is the most difficult visual task. Instead, he proposes a differentiated analysis of all the visual tasks that arise, an analysis conducted according to location, type and frequency.

Biological needs
Lam sees the second complex of his system, i.e. the "biological needs", as being more essential. The biological needs sum up the psychological demands that are placed on a visual environment and are applicable in every context. Whereas activity needs result from a conscious involvement with the surroundings and are aimed at the functionality of a visual environment, biological needs largely concern unconscious requirements which are fundamental for evaluating a situation emotionally. They are concerned with the feeling of well-being in a visual environment. The starting point for Lam's definition is the fact that our attention is only dedicated to one specific visual task in moments of utmost concentration. Our visual attention almost always widens to observe our entire surroundings. This allows changes in the environment to be perceived immediately and behaviour to be adapted to the altered situation without delay. The emotional evaluation of a visual environment depends not least on whether that environment clearly presents the required information or whether it conceals it from the observer.

Orientation
Of all the fundamental psychological demands placed on a visual environment, Lam ranks the need for clear orientation as paramount. Orientation can be initially understood in spatial terms here. In which case, it would then relate to how discernable destinations and routes are and to the spatial location of entrances, exits and other specific facilities within the environment, e.g. a reception desk or the individual areas of a department store. But orientation also concerns information on further aspects of the surroundings, such as the time of day, the weather or what is going on in that area. If this information is missing, as may be the case in closed spaces in department stores or in the corridors of large buildings, then the environment is perceived as unnatural and even oppressive. It is only by leaving the building that we can catch up with the information deficit.
Discernability

A second group of psychological needs concerns how well the surrounding structures can be discerned and comprehended. The first point to note here is that all areas of the spaces are sufficiently visible. This is the decisive factor for our feeling of security within a visual environment. Dark corners in subways or in the corridors of large buildings may harbour danger, in the same way as glaringly overlit areas. Comprehension of our surroundings does not simply mean that absolutely everything has to be visible however, it also includes an element of structuring, i.e. the need for a clearly structured and ordered environment. We perceive situations as positive not only when the form and structure of the surrounding architecture are clearly discernable, but also when the essential areas are clearly delineated from their background.

Communication

A third area covers the balance between man’s need for communication and his requirement for a defined private sphere. Both extremes here are perceived as negative, i.e. complete isolation as well as “life in a goldfish bowl”. A given space should facilitate contact with other people, yet at the same time it should also allow private areas to be defined. One such private area could be defined by a patch of light that picks out a group of seats or a conference table from the overall surroundings within a larger room.

Instead of constituting a confusing and possibly contradictory deluge of information, a space presented in this way will feature a comprehensible number of properties that build into a clearly structured whole. Having a nice view or other points of visual interest, such as a work of art, are also important for relaxation.
The majority of the information that we receive about the world around us comes through our eyes. Light is not only an essential prerequisite, it is the medium by which we are able to see. Through its intensity, the way it is distributed and through its properties, light creates specific conditions which can influence our perception. Lighting design is, in fact, the planning of our visual environment. Good lighting design aims to create perceptual conditions which allow us to work effectively and orient ourselves safely while promoting a feeling of well-being in a particular environment. At the same time it enhances the environment in an aesthetic sense. The physical qualities of a lighting situation can be calculated and measured. Ultimately, it is the actual effect the lighting has on the user of a space and his subjective perception, that decides whether a lighting concept is successful or not.
When describing human perception, it is inadequate to portray the eye as an optical system. The process of perception is not a matter of how an image of our environment is transferred to the retina, but how the image is interpreted and how we differentiate between objects with constant properties in a changing environment.
Eye and camera

The process of perception is frequently explained by comparing the eye with a camera. In the case of the camera, an adjustable system of lenses projects the reversed image of an object onto a film. The amount of light is controlled by a diaphragm. After developing the film and reversing the image during the enlarging process, a visible, two-dimensional image of the object becomes apparent. Similarly, in the eye, a reversed image is projected onto the retina of the eye via a deformable lens. The iris takes on the function of the diaphragm, the light-sensitive retina the role of the film. The image is then transported via the optic nerve from the retina to the brain, where it is adapted in the visual cortex and made available to the conscious mind.

In regard to the eye, however, there are considerable differences between what is actually perceived and the image on the retina. The image is spatially distorted through its projection onto the curved surface of the retina. Through chromatic aberration – light of various wavelengths is refracted to varying degrees, which produces coloured rings around the objects viewed. These defects, however, are eliminated when the image is being processed in the brain.

Perspective

If we perceive objects that are arranged within a space, the perspectives of the images produced on the retina are distorted. A square perceived at an angle, for example, will produce a trapezoidal image on the retina. This image may, however, also have been produced by a trapezoidal surface viewed front on. The only thing that is perceived is one single shape – the square that this image has actually produced. This perception of a square shape remains consistent, even if the viewer or object move, although the shape of the image projected on the retina is constantly changing due to the changing perspective.
There are two different types of receptor: the rods and the cones, which are not distributed evenly over the retina. At one point, the so-called "blind spot", there are no receptors at all, as this is the point at which optic nerves enter the retina.

Receptor density

An area of the retina called the fovea is the focal point of the lens. In this area, the concentration of the cones is greatest, whereas the density of the cones reduces rapidly outwards to the periphery. Here we find the greatest concentration of rods, which do not exist in the fovea.

Rods

The older of these two systems, from an evolutionary point of view, is the one consisting of rods. The special attributes of this system include high light sensitivity and a great capacity for perceiving movement over the entire field of vision. On the other hand, rods do not allow us to perceive colour; contours are not sharp and it is not possible to concentrate on objects, i.e. to study items clearly even if they are in the centre of our field of vision. The rod system is extremely sensitive and is activated when the illuminance level is less than 1 lux. Our night vision features, particularly the fact that colour is not evident, contours are blurred and poorly lit items in our peripheral field of vision are more visible – can be explained by the properties of the rod system.

Cones

The cones form a system with very different properties. This is a system which we require to see things under higher luminous intensities, i.e. under daylight or electric light. The cone system has lower light-sensitivity and is concentrated in the central area in and around the fovea. It allows us to see colours and sharper contours of the objects on which we focus, i.e. whose image falls in the fovea area. In contrast to rod vision, we do not perceive the entire field of vision uniformly; the main area of perception is in the central area. The peripheral field of vision is also significant, if interesting phenomena are perceived in that area; in that case our attention is automatically drawn to these points. This is then received as an image on the fovea to be examined more closely. Apart from noticing sudden movement, striking colours and patterns, the main reason for us to change our direction of view is the presence of high luminances – our eyes and attention are attracted by bright light.
One of the most remarkable properties of the eye is its ability to adapt to different lighting conditions. We can perceive the world around us by moonlight or sunlight, although there is a difference of a factor of 100,000 in the illuminance. The extent of tasks the eye is capable of performing is extremely wide – a faintly glowing star in the night sky can be perceived, although it only produces an illuminance of 10–12 lux on the eye.

This ability to adapt to the illuminance is only influenced to a very small extent by the pupil. Adaptation is performed to a large degree by the retina. The rod and cone system responds to different levels of light intensity. The rod system comes into effect in relation to night vision (scotopic vision), the cones allow us to see during the daytime (photopic vision) and both receptor systems are activated in the transition times of dawn and dusk (mesopic vision).

Although vision is therefore possible over an extremely wide area of luminances, there are clearly strict limits with regard to contrast perception in each individual lighting situation. The reason for this lies in the fact that the eye cannot cover the entire range of possible luminances at one and the same time. The eye adapts to cover one narrow range in which differentiated perception is possible. Objects that possess too high a luminance for a particular level of adaptation cause glare, that is to say, they appear to be extremely bright. Objects of low luminance, on the other hand, appear to be too dark.
To understand what visual perception is all about, it is not so much the transport of visual information that is of significance. It is rather the process involved in the interpretation of this information, the creation of visual impressions. The question that arises is whether our ability to perceive the world around us is innate or the result of a learning process. Another point to be considered is whether sensory impressions from outside alone are responsible for the perceived image or whether the brain translates these stimuli into a perceivable image through the application of its own principles of order. There is no clear answer to this question. Perceptual psychology is divided on this point.
Contour

Experience, and the expectations linked with it, may be so strong that missing elements of a shape are perceived as complete or individual details amended to enable the object to meet our expectations. The perception of a shape with missing contours is simply based on shadow formation.

Overall shape

Experience leads us to recognise an overall shape by being able to identify essential details.

Colour

This picture illustrates how a colour is matched to the respective pattern perceived. The colour of the central grey point adjusts itself to the black or white colour in the perceived pattern.
Fixed objects produce retinal images of varying shapes, sizes and brightness. Due to changes in lighting, distance or perspective, this indicates that mechanisms must exist to identify these objects and their properties and to perceive them as being constant. There is no single, simple explanation for the way perception works. Optical illusions provide an opportunity to examine the performance and objectives of perception.
Brightness

The fact that a medium grey area will appear light grey if it is bordered in black, or dark grey if it is bordered in white. This can be explained by the fact that the stimuli perceived are processed directly – brightness is perceived as a result of the lightness contrast between the grey area and the immediate surroundings.

What we are considering here is a visual impression that is based exclusively on sensory input which is not influenced by any criteria of order linked with our intellectual processing of this information.

Luminance gradient

The continuous luminance gradient across the surface of the wall is interpreted as a property of the lighting. The wall reflectance factor is assumed to be constant. The grey of the sharply framed picture is interpreted as a material property, although the luminance is identical to the luminance in the corner of the room.

Three-dimensionality

Changing luminance levels may arise from the spatial form of the illuminated object; examples of this are the formation of typical shadows on objects such as cubes, cylinders or spheres.

The spatial impression is determined by the assumption that light comes from above.

By inverting the picture, the perception of elevation and depth is reversed.

The spatial form of an object can be recognised by the gradient of the shadows.
Irregular or uneven luminances can result in confusing lighting situations. This is evident, for example, when luminous patterns created on the walls bear no relation to the architecture. The observer’s attention is drawn to a luminous pattern that cannot be explained through the properties of the wall, nor as an important feature of the lighting. If luminance patterns are irregular, they should, therefore, always be aligned with the architecture.

The lighting distribution on an unstructured wall becomes a dominant feature. The same lighting distribution on a structured wall is interpreted as background and not perceived.

Light distribution that is not aligned with the architectural structure of the space is perceived as disturbing patterns that do not relate to the space.

The visible pool of light determines whether it is perceived as background or as a disturbing shape. Light distribution that is not aligned with the shape of the picture is perceived as a disturbing pattern.

The perception of colour, similar to the perception of brightness, is dependent on neighbouring colours and the quality of the lighting. The necessity for us to be able to interpret colours is based on the fact that colour appearances around us are constantly changing. A colour is therefore perceived as being constant both when viewed in the bluish light of an overcast sky or in warmer direct sunlight – colour photographs taken under the same conditions, however, show the distinct colour shifts that we must expect under the particular type of light.
Perspective

Our misinterpretation of lines of the same length shows that the perceived size of an object does not depend on the size of the retina image alone, but that the distance of the observer from the object is significant. Vice versa, objects of known sizes are used to judge distances or to recognise the size of adjacent objects. From daily experience we know that this mechanism is sufficient to allow us to perceive objects and their size reliably. Therefore, a person seen a long way away is not perceived as a dwarf and a house on the horizon not as a small box. Only in extreme situations does our perception deceive us: looking out of an aeroplane, objects on the ground appear to be tiny; the viewing of objects that are considerably farther away, e.g. the moon, is much more difficult for us to handle.

Size

To allow for the perception of size, we have a mechanism that balances the perspective distortion of objects. It guarantees that the changing trapezoidal and ellipsoidal forms in the retina image can be perceived spatially as being normal, rectangular or round objects by being aware of the angle at which the object is viewed.
Before a property can be attributed to an object, the object itself must be recognised, that is to say, distinguished from its surroundings. This process of interpretation has been used to formulate laws according to which certain arrangements are grouped together to form shapes, i.e. objects of perception. These laws of gestalt are of practical interest to the lighting designer. Every lighting installation comprises an arrangement of luminaires – on the ceiling, on the walls or in the space. This arrangement is not perceived in isolation, but in forms or groups in accordance with the laws of gestalt. The architectural surroundings and the lighting effects produced by the luminaires produce further patterns, which influence in our perception of the space.
Closed form

An essential principle of the perception of gestalt is the tendency to interpret closed forms as pure shapes.

Proximity

Elements arranged close together are grouped according to the law of proximity and form a pure shape. The example on the left demonstrates that we first see a circle and then an arrangement of luminaires. The circles are arranged in such a strict order that the imaginary linking lines between them is not straight lines, but forms a continuous circle, not a polygon.

Luminaires are grouped in pairs. Four points are grouped to form a square.

From eight points on, a circle is formed.

Inside

Shapes that are not completely closed can also be perceived as a gestalt. A closed shape is always seen as being on the inside of the linking line – the formative effect therefore only works in one direction. This inner side is usually identical to the concave, surrounding side of the line that encloses the shape. This in turn leads to a formative effect even in the case of arcs or angles, making a pure shape visible inside the line, that is to say, in the partly enclosed area. If this leads to a plausible interpretation of the initial pattern, the effect of the inner side can be significant.

An arc makes a pure shape visible on the inside of the line.
Symmetry

In regard to symmetry, the perception of a form as a pure shape is based on simple, logical structure. On the other hand more complex structures belonging to the same pattern disappear into an apparently continuous background.

When two square luminaires are added to the pattern of circular downlights, the arrangement is perceived according to the law of symmetry to form two groups of five.

Shapes of equal width

A similar result occurs in parallel shapes of equal width. This is not strictly a case of symmetry. A principle of order and organisation is, however, evident, allowing us to perceive a pure shape. Two parallel lines show similarity.

Even without strict symmetry, it is possible to recognise a pure shape.

Continuous line

A basic law of gestalt is to prefer to perceive lines as steady continuous curves or straight lines, and to avoid bends and kinks. Our preference to perceive continuous lines is so great that it can influence our overall interpretation of an image.

Law of gestalt relating to continuous lines. The arrangement is interpreted as two lines crossing.
**Guide**

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**Pure form**

When it comes to two-dimensional shapes, the law of the continuous line conforms with the law of pure form. In this case, shapes are organised to create figures that are as simple and clearly arranged as possible.

The downlight arrangement is grouped into two lines according to the law of pure form.

The arrangement is interpreted as two superimposed rectangles.

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**Identity**

Besides spatial layout, the structure of the shapes themselves is also responsible for their formation into groups. The shapes in the accompanying drawing are not organised according to proximity or axial symmetry, but in groups of identical shapes. This principle of identity also applies when the shapes in a group are not absolutely identical but only similar.

Luminaires of the same type are grouped together.
We are not however, conscious of every object that comes within our field of vision. The way the fovea prefers to focus on small, changing scenes shows that the perception process purposefully selects specific things to look at. This selection is inevitable, as the brain is not capable of processing all the visual information in the field of view. It also makes sense because not all the information that exists in our environment is necessarily relevant to us.
Activity

The value of any particular information relates to the current activity of the observer. This activity may be work or movement-related or any other activity for which visual information is required. Lighting conditions under which the visual task can be perceived to an optimum degree can be determined from the above-mentioned specific features. It is possible to define ways of lighting which will be ideal for specific activities.

Information

There is another basic need for visual information that goes beyond the specific information required for a particular activity. This is not related to any particular situation, it results from man’s biological need to understand the world especially man’s need to feel safe. To evaluate danger, we must be aware of the structure of the environment. This applies to orientation, weather, time of day and information relating to other activities occurring in the area. If this information is not available, e.g. in large, windowless buildings, the situation is often considered to be unnatural and oppressive.

Social

In regard to man’s social needs – the need for contact with other people and the need for private space are somewhat contradictory and require careful balance. The focus on which visual information is required is determined by the activities and basic biological needs. Areas likely to provide significant information – on their own or by being highlighted – are perceived first. They attract our attention. The information content of a given object is responsible for its being selected as an object of perception. Importantly, the information content influences the way in which an object is perceived and evaluated.