

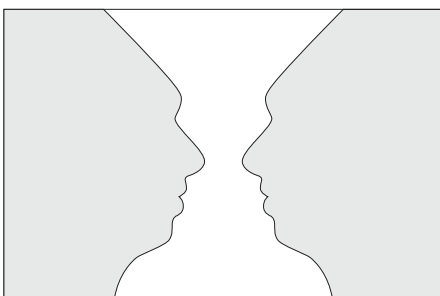
the entire environment is lit with light of the same luminous colour and the lighting does not change too rapidly. If different lighting situations can be compared directly, the contrast due to different luminous colours will be perceived. This becomes evident when the observer moves through spaces that are lit differently, but above all when different light sources are used within one room or if the observer is in a space comprising coloured glazing and in a position to compare the lighting inside and outside the building. Lighting a space using different luminous colours can be done effectively, if the change of luminous colour bears a clear relation to the respective environment.

2.1.2.2 Laws of gestalt

The main theme of this chapter so far has been the question of how the properties of objects – size, form, reflectance and colour – are perceived as being constant in spite of changing retina images. These considerations did not include how the object itself is perceived.

Before properties can be attributed to an object, the object itself must be recognised, that is to say, distinguished from its surroundings. The process of identifying this object in the profusion of continuously changing stimuli on the retina is no less problematic than the perception of objects. Or to put it in more general terms: how does the perceptual process define the structures its attention has been drawn to and how does it distinguish them from their surroundings.

An example will serve to illustrate this process. In the drawing on the left most people spontaneously see a white vase against a grey background. On closer examination two grey heads facing each other against a white background become apparent. Once the hidden faces have been discovered, there is no difficulty in perceiving the vase or the faces, but it is impossible to see both at the same time.



Depending on how you view this drawing, you will see a vase or two heads facing each other.

In both cases we perceive a figure – either the vase or the two faces against a background of a contrasting colour. The separation of gestalt (form) and environment, of motif and background, is so complete that if you imagine that the form is moved, the background does not move in unison. In our example the background is therefore an area behind the form and fills the entire drawing. Apart from its colour and its function as an environment no other properties are attributed to the background area. It is not an object in its own right and is not affected by changes inherent to the form. This impression is not influenced by the knowledge that the "background" in our example, is in fact, another form, or gestalt – the perceptual

mechanism is stronger than our conscious reasoning.

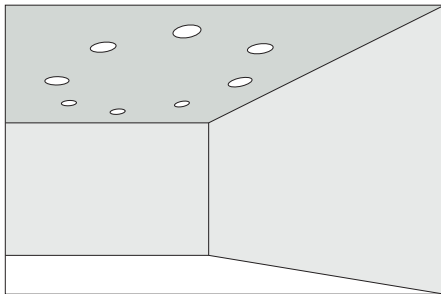
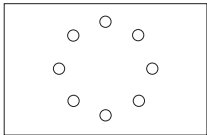
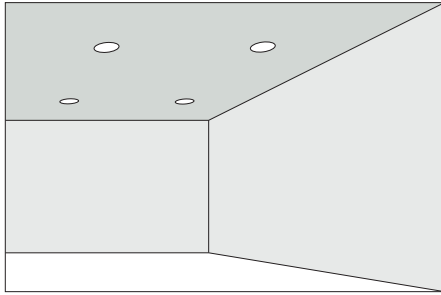
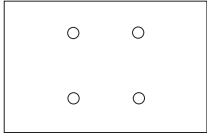
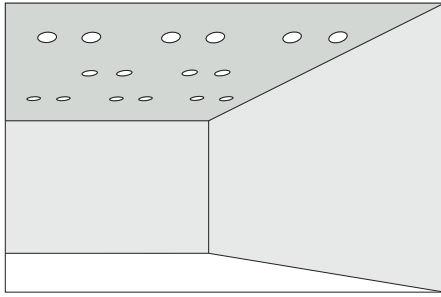
This example shows that the complex and inconsistent patterns of the retina image are ordered in the course of the perpetual process to enable us to interpret what we perceive easily and clearly. In our example, a portion of these patterns within one picture are grouped together to form an image, i.e. an object of interest while the rest of the patterns are regarded as the background and their properties by and large ignored.

Moreover, the fact that of the two interpretations the vase is the preferred one shows that this process of interpretation is subject to certain rules; that is to say, that it is possible to formulate laws according to which certain arrangements are grouped together to form shapes, i.e. objects of perception.

These rules are not only of value when it comes to describing the perceptual process, they are also of practical interest for 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 as such, but is organised into forms or groups in accordance with the laws of gestalt. The architectural setting and the lighting effects produced by the luminaires give rise to further patterns, which are included in our perception of the overall situation.

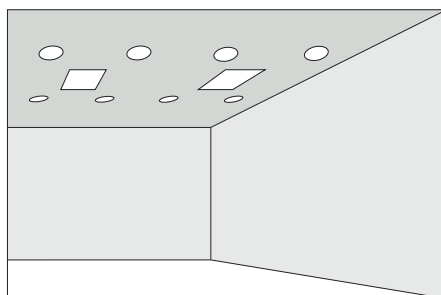
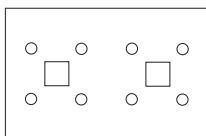
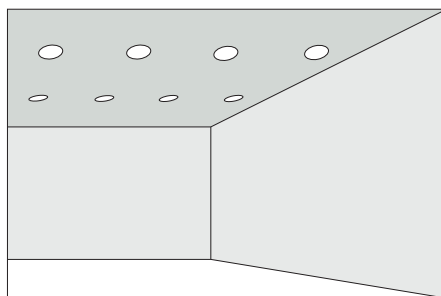
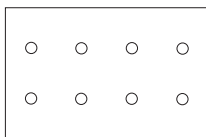
It might occur that these structures are reorganised visually to such an extent that we do not perceive the patterns as intended, but other shapes and forms. Another, negative effect may be – for example, in the case of a chessboard pattern – that gestalt and background cannot be clearly identified. The result is continuously shifting focus selection. It is therefore necessary to consider to the laws of gestalt when developing lighting design concepts.

Law of gestalt relating to proximity. Luminaires are grouped in pairs.



Law of gestalt relating to proximity. Four points are grouped to form a square, from eight points upwards a circle is formed.

The downlights are arranged in two lines in accordance with the law of pure form. When two modular luminaires are added the arrangement is reorganised according to the law of symmetry to form two groups of five.



An initial and essential principle of the perception of gestalt, is the tendency to interpret *closed forms* as a figure.

Closed forms need not possess a continuous contour. Elements arranged close together are grouped according to another law of gestalt, the *law of proximity*, and form a figure. 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, but forms a circle; the resulting shape is not a polygon but a perfect circle.

Apart from the effect produced by proximity, there is another mechanism via which shapes that are not completely closed can 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 figure. This in turn leads to a formative effect even in the case of open curves or angles, rendering a figure 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.

Patterns frequently possess no shapes that can be arranged according to the principles of closure or proximity, or the inner line. But in such cases there are laws of gestalt that allow certain arrangements to appear as a shape. The perception of a form as a pure shape is based on simple, logical structure, whereas more complex structures belonging to the same pattern disappear into an apparently continuous background. One example of this logical structuring of specific shapes is *symmetry*.

Shapes of *equal width* have a similar effect. This is not strictly a case of symmetry. A principle of order and organisation is, however, evident, and this allows us to perceive a shape.

If a pattern contains no symmetry or similar widths, *uniform style* can still be enough to render a shape a gestalt.

Apart from providing the ability to distinguish shapes from their surroundings, i.e. figures from their background, perception also clarifies the relation of figures to each other; be it the grouping together of individual shapes to form one large shape or the inter-relationship of a number of shapes to form a group. The basic principle that lies behind our ability to distinguish between shapes and background is once again evident here: our unconscious search for order in our visual field.