

Design Principles – Fundamentals of Design

Here are some of the most fundamental design principles for creating aesthetically pleasing images. These rules are also used to analyze and describe images (image analysis).

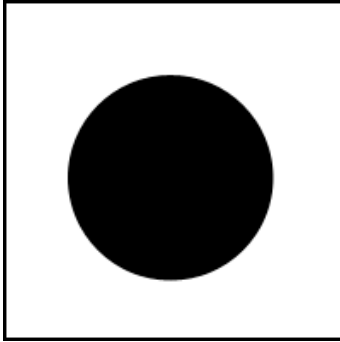
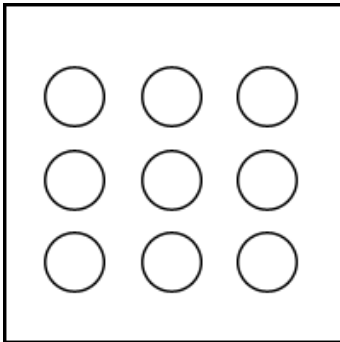


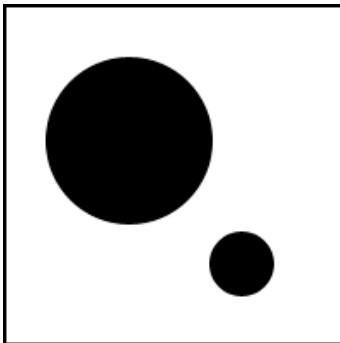
Figure-Ground Differentiation (Figure-Ground Relation)

The depicted image should stand out from the background or surroundings so that the viewer can actually make it out. The smaller area is usually perceived as the figure, while the larger area is perceived as the ground. Therefore, this composition should be clear so that the viewer can understand it.



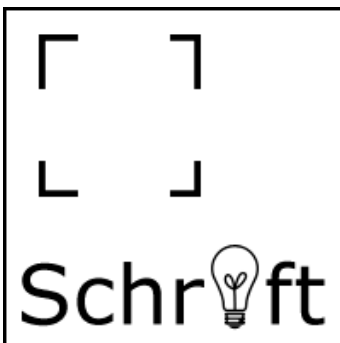
Law of Proximity

Belonging; everything that belongs together or is brought together into a group can be recognized.



Law of Similarity

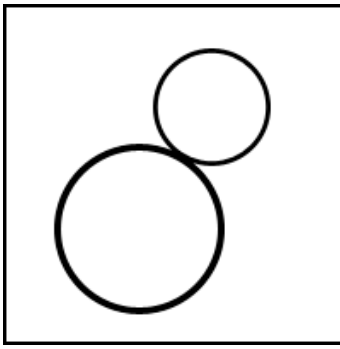
Shapes that resemble one another are perceived as a single unit (belonging together); they resemble one another in color, shape, or size



Law of Unity

When looking at shapes or text, we imagine the missing part so that it forms a whole again. We complete all the characters (e.g., when they are set in the typeface):

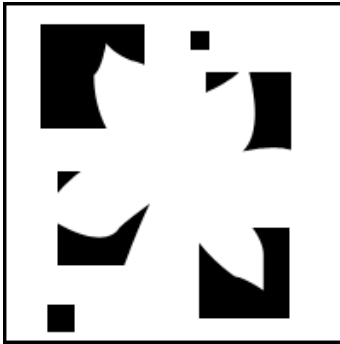
- > However, this is something we must first learn
- > For this reason, individual letters can also be replaced with symbols or shapes, and the word will still be understood.



Tendency toward conciseness

A tendency to create a hierarchy, even when one isn't strictly necessary:

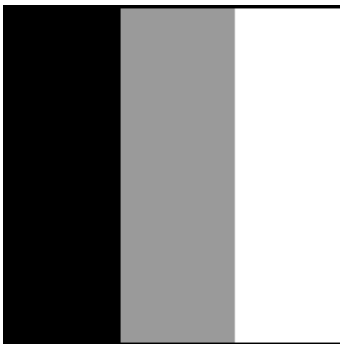
- > Not every object can be in the foreground
- > The object in the foreground is usually defined as such
- > In photography, for example, the foreground is brought into focus while the background is blurred.



Informational Value

This is determined by the number of visual elements and the degree of complexity. The balance between new, unexpected, and familiar elements is crucial. Both depend on our experience and individual knowledge. The fewer elements an image contains, the faster it can be understood; the more details an image has, the harder it is to grasp, and it therefore tends to appear cluttered. Too many or too few visual elements, or too many new elements in the image, can have a negative effect on the viewer.

Example: A laboratory is recognized as such by laypeople if it contains instruments that are typical (to the layperson) and not just unfamiliar elements.



Contrast

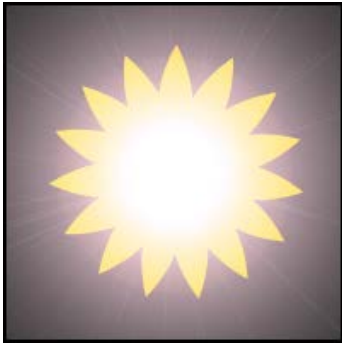
Contrast defines the contours of an image and gives it structure, making it one of the most important design elements. When contrast is distributed in equal thirds—one-third light, one-third medium, and one-third dark—the image is perceived as varied and harmonious.

If the image contains only very light or very dark tones, it can also be perceived as appealing. However, if an image consists solely of midtones, it often appears boring and lacking in contrast. If an image is composed predominantly of a single tone, it is considered a high-key image when using light tones and a low-key image when using dark tones.



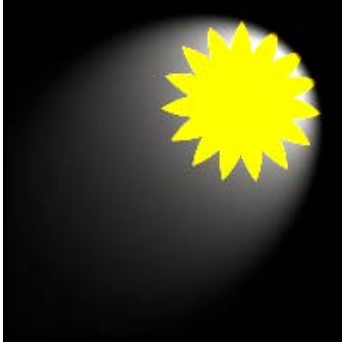
Lighting

Along with contrast, it is an equally important design element. (Photography = drawing with light) Light is largely responsible for the sense of space in an image. Diffuse, soft light makes an object appear flat; directed, hard light highlights objects three-dimensionally through the formation of shadows and conveys a sense of space. Light also plays a major role in determining the mood of the image; ultimately, it is also responsible for colors.



Backlighting and Side Lighting

When you have the sun behind you while taking a photo, the resulting images tend to have a rather flat lighting. While this is less of an issue for color photos, it is less advantageous for black-and-white photos, as the tonal contrast tends to be quite low.

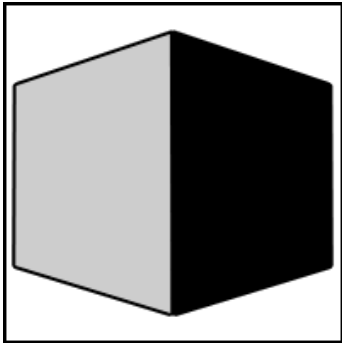


Side lighting

To avoid this, you need to adjust your position slightly. Side lighting ensures a more three-dimensional illumination of the subject (applicable to both color and black-and-white images).

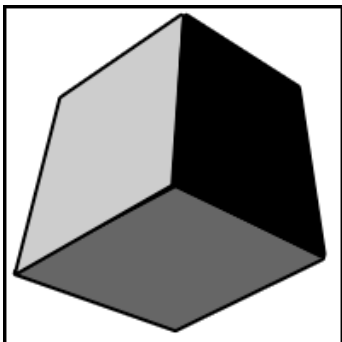
Perspective

Different perspectives can make an image appear particularly interesting or ordinary.



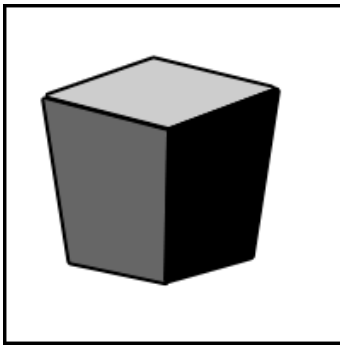
Eye-level perspective / Normal perspective (also known as central perspective)

Objects appear smaller the farther away they are from us. In central perspective, the sense of space arises because the object lies on the same plane as the viewer. A vanishing point in the distance, toward which all lines converge, conveys a sense of space and depth. Objects moving along the vanishing lines toward the vanishing point appear smaller to us.



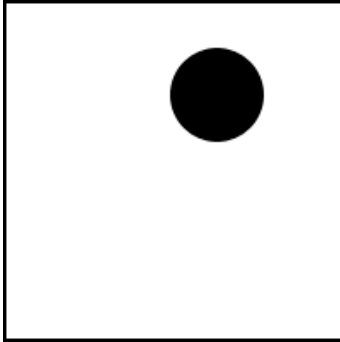
Low-angle view

This is an unusual perspective for us, which is why it catches our attention. However, one should not cross a certain line, as an overly abstract representation may be met with rejection by the viewer. Due to the low viewing angle, the horizon and vanishing point shift toward eye level. Objects depicted from a frog's-eye view appear visually elevated and towering, and can even seem oppressive (looking down from above).



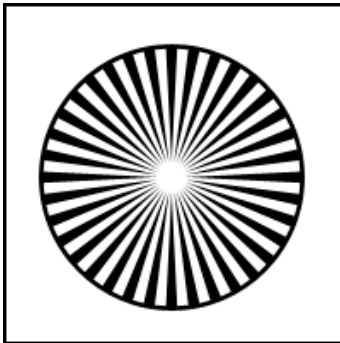
Bird's-eye view

This is also an unusual perspective for us. The vanishing point is pushed down to the bottom edge of the image due to the viewer's elevated vantage point. This creates an impression of boundlessness and a sense of depth (as in canyons). Objects appear smaller and less significant (the viewer is elevated).



Golden Ratio

The opposite of symmetry is asymmetry. This appears more lively, harmonious, and almost as if arranged by chance. One of the most commonly used balanced asymmetries in image composition is the Golden Ratio. In this case, the most important element of an image is positioned one-third of the way from the left or right edge of the image, respectively, along the total height and width of the image.



Total Sharpness

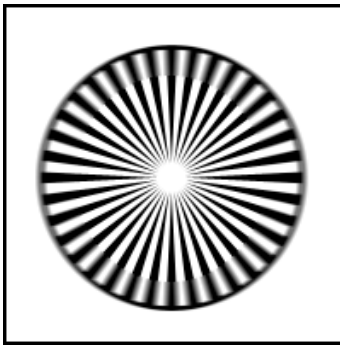
Total sharpness—which extends evenly across the entire image—has a decisive influence on the image's impact. Sharpness is both informative and impartial, but it can also appear cold and sterile. It can be used depending on the desired message of the image. If the informational content of an image is crucial (e.g., descriptions of technical devices), total sharpness is essential. However, total sharpness can also be used to further emphasize an icy winter landscape.



Winter Landscape in Perfect Focus



Winter Landscape – The Image Compared to a Blurred Version



Selective Focus

The human eye can actually see only a field of view of about 1.5 degrees in sharp focus. However, our eyes are constantly moving and scanning our surroundings, so we perceive a wider field of view as being in focus. We cannot, therefore, see our entire environment in complete sharpness at a single glance; consequently, an image designed with selective focus (where the image is sharp only at a selected point or plane) is particularly appealing to view. By focusing on the most important element of the image, so to speak, you visually highlight and emphasize it; it is brought out in a three-dimensional way.



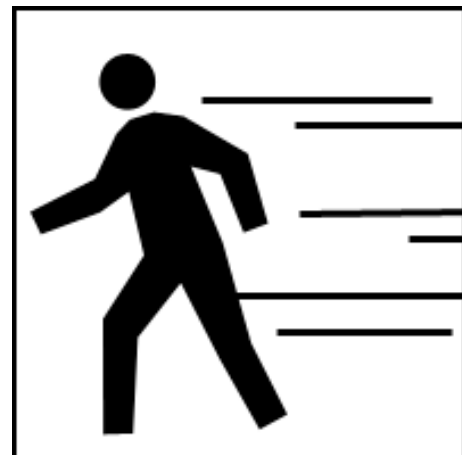
Motion Blur

Unlike moving images, photos or other still images have no direct way of depicting movement. However, one can create an illusion of movement using motion blur. In photography, this is achieved either through long shutter speeds, resulting in a blurred smear, or by panning the camera in the direction of movement to capture a sharp object against a blurred background. In painting, you can apply paint in the opposite direction of the movement to achieve an effect similar to that in a photograph.

In drawing, this can be suggested using action lines.



In this image, the motion blur is particularly evident in the cyclists on the left side.



Motion blur example drawing

Landscape Format

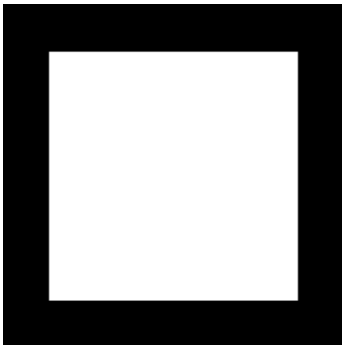
Choosing the right aspect ratio for a subject can significantly influence the mood of the image. Horizontal subjects or elements (such as the horizon) are further emphasized by an extreme landscape format. The greater the difference between the image's height and width, the more attention the image attracts. However, lines and shapes in the image that run in the opposite direction (in this case, vertical lines) weaken the effect. An elongated aspect ratio conveys a sense of calm and vastness.



This image is in the "standard" landscape format. (Original aspect ratio)



Here is an example of an extreme landscape format.

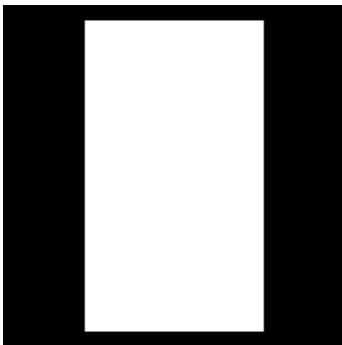


Square Format

Alongside the rectangle, the square is one of the most versatile image formats. It can easily be converted into a portrait or landscape image at a later stage. With its sides of equal length, the square image format is calm and static. However, well-designed image content can create dynamism and tension. Image content and image format interact directly with one another.



Here is an example image in square format.



Portrait Orientation

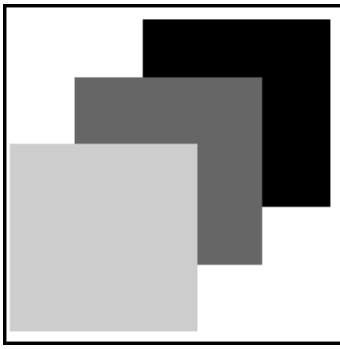
The rectangle is a very common image format. The subject should determine whether to use portrait or landscape orientation. Unlike landscape orientation, portrait orientation conveys a sense of power and dynamism. Here, too, more extreme aspect ratios can further emphasize the format's characteristics in the image.



Here is the example image again in portrait orientation.

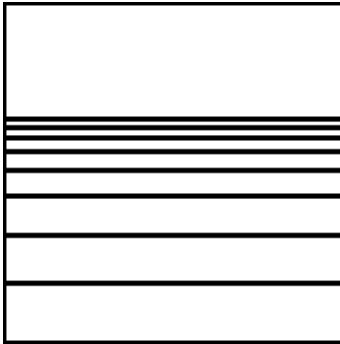


And here it is again in extreme portrait orientation.



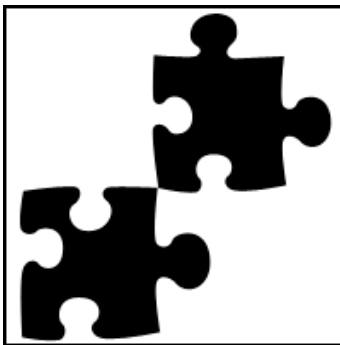
Foreground, Middle Ground, and Background

To create a better sense of depth, you should clearly distinguish between the foreground, middle ground, and background in your image. A typical composition would feature a silhouette-like suggestion of the foreground, which leaves space for a figure in the middle ground and allows the setting (background) to be recognized.



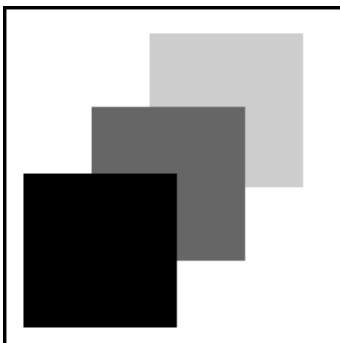
Textural Gradient

As distance increases, the spaces between vertical or horizontal objects that are equidistant from one another become smaller and smaller; this is the textural gradient (e.g., power poles along a country road). We assume that objects of equal value are also the same size, and we perceive spatiality through the decreasing size of these objects.



Silhouette

Due to specific lighting conditions (backlighting and low light), a silhouette effect can occur, causing the contours of objects to stand out clearly from the rest of the bright surroundings. However, this strong contrast and the limited tonal gradations can also be responsible for reduced perception of an object's details. The high contrast ratio, however, also creates a strong sense of space and can enhance the figure-ground relationship.



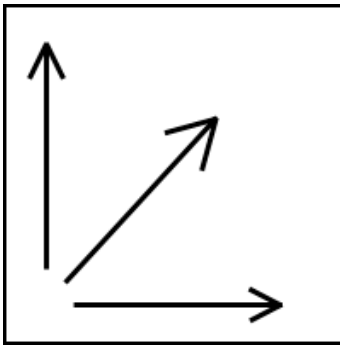
Atmospheric Perspective

Atmospheric perspective is another characteristic of vastness and spatiality. In landscapes, as distance increases, the contrast between objects in the background diminishes due to a deepening blue hue caused by increasingly dense atmospheric haze. The farther away an object is, the more it blends into the blue of the sky.



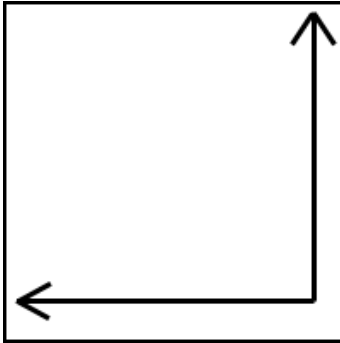
Flatness

If an image lacks a sense of space, it needs other elements to appear interesting. A flat surface, as a two-dimensional form, would be one such element. In addition to light-dark contrast and varying shades of color, linear structures or geometric shapes can also be used.



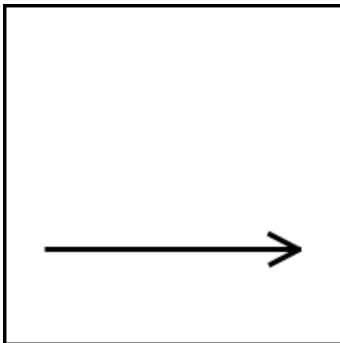
Line Work

The way lines are drawn within an image is also an important design element. The message of an image is shaped by the specific direction of the lines. Lines can connect or separate. A straight line tends to appear static and rigid, whereas a jagged or curved line appears lively and dynamic. When lines intersect, they can form right angles, squares, rectangles, triangles, or polygons. These lines do not always have to be visible in the image; implied lines lend an image much more appeal.



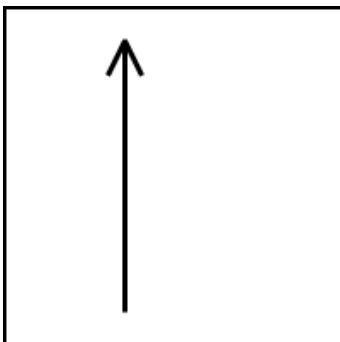
Right Angle

When a horizontal and a vertical line meet, a right angle is formed. The horizontal line generally appears static and calm, whereas the vertical line radiates dynamism and excitement. The effects of the two are thus opposite. A right angle thus contains both effects; it therefore carries a meaning that is half static and half dynamic.



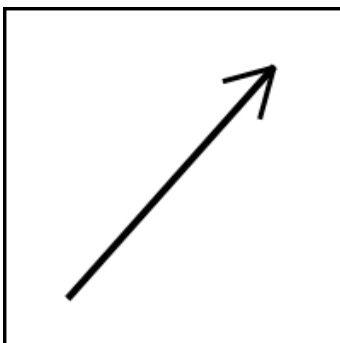
Horizontal

The horizontal line appears static and passive to the viewer, though it can also radiate calm or even seem boring. Most often, it is the horizon line that appears as the horizontal element in an image (hence the name). The image is divided into a darker lower half and a lighter upper half if the horizon line runs exactly in the middle of the image. Such symmetry appears contrived and boring. An asymmetrical division in a ratio of 1:3 or 1:6—or vice versa—is recommended.



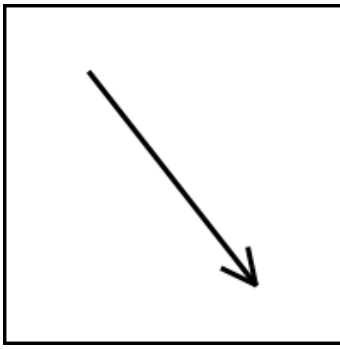
Vertical

It conveys steadfastness and vitality and is perceived as an upward force. However, multiple vertical lines in an image should not be placed directly on top of one another, but rather side by side (a negative example is a person with a telephone pole “growing” out of their head).



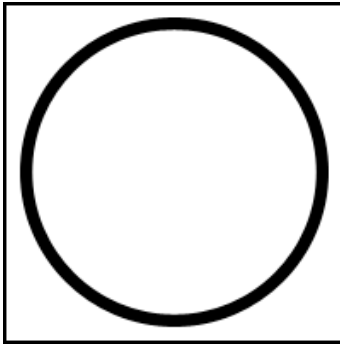
Diagonal

It conveys movement and striving forward. For most people in Western culture, the diagonal line from the bottom left to the top right is perceived as positive due to the customary direction of reading and writing. The opposite diagonal, on the other hand, is generally perceived as negative.



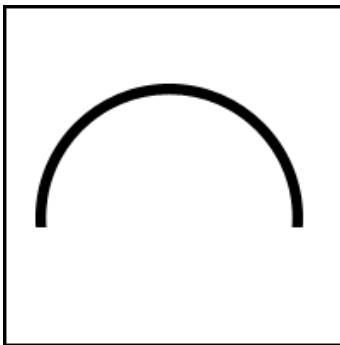
Counter-diagonal

Most people in Western culture perceive the counter-diagonal as a downward movement and a descent.



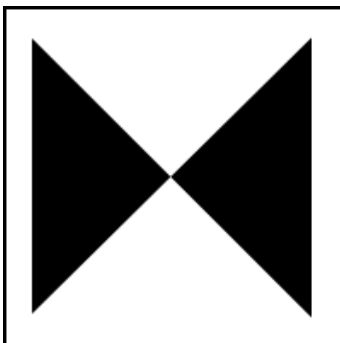
Circle

It is a self-contained archetype. From its center, it extends uniformly in all directions. Its effect is enveloping and protective (perfection). As an oval, it loses its central rigidity and balance. In the oval, either the vertical or horizontal orientation predominates, and it can therefore appear both passive and static as well as aspiring and active.



Arch

This symmetrical figure has a connecting character, as seen, for example, in a bridge.



Symmetry

Symmetry arises when identical visual elements are repeated, whether through sequencing, rotation, or mirrored arrangement. Symmetry radiates rigor, clarity, and calm and is easy to grasp. However, it can occasionally appear boring.