





The Line

Lines are an active means of organizing an image. If one follows the progress of a line in a composition with the eye, one clearly feels a movement within and often beyond the edges of the image plane. Another aspect of a line is particularly interesting: the same line that divides a surface or shape also forms the boundaries of the smaller surfaces or shapes resulting from that division.



1 Brightness contrast, Two points, Horizontal lines

Emergence of and Forces Acting on a Line

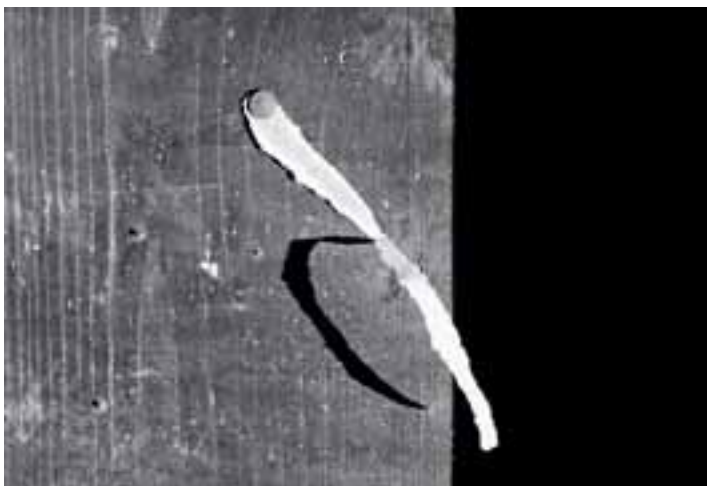
A point by itself is quiescent, having no tendency toward visual movement. An apparent movement can result toward other design elements from optical tensions with other points or with the border of the image. This complete stability is negated if the point is moved and produces a line. With its dynamic tendency to move the eye, a line is the strongest contrast to the static point.

The Emergence of a Line

The fundamental design element, the point, is produced by some form of directed energy. In photography this is either a source of light, a beam of light, or the reflection of light from a small bright surface. This directed energy leaves traces (points) on the film material. Now if the light spot or the camera moves during a long exposure time, multiple images of the moving light point will result in a line (diagram A). Time exposures of driving cars, races, and so on in the dawn or darkness are well-known subjects, which show the phenomenon of the emergence of lines in photographic imagery (photo 8). Since in each case the eye naturally sees the points themselves in motion and not the "lines", the photographic result can contain surprises.



2 Brightness contrast, Visual shapes



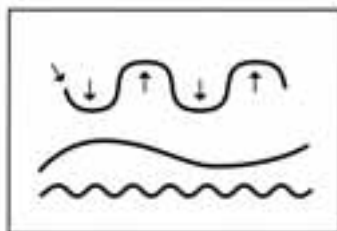
3 Brightness contrast, Point, Textural detail



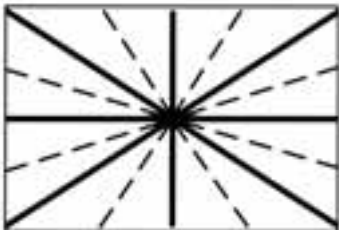
4 Brightness contrast, Textural detail



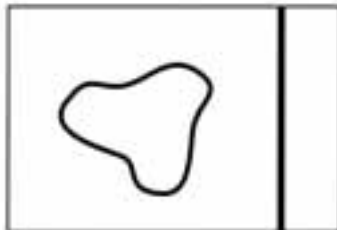
A



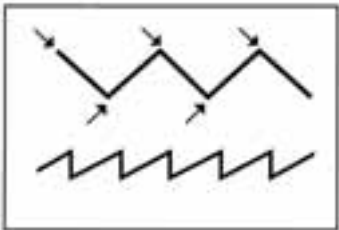
D



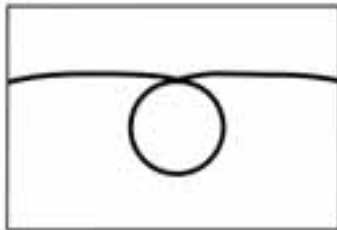
B



E



C



F

Diagrams A-F

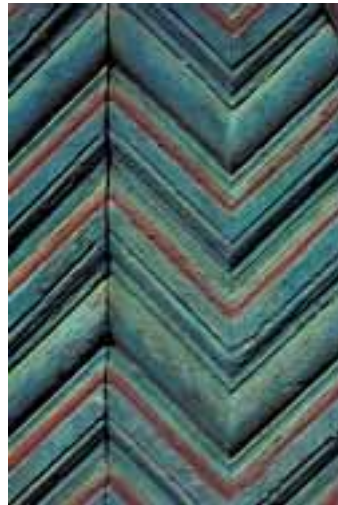
Lines are traces of moving points. The horizontal, the vertical and the diagonal are the most important straight lines. Changes of direction in the line's progression can result in a gentle, active, or even aggressive line character. In addition to its primary effect of causing the eye to move, the line has two additional effects in an image of simultaneously dividing a surface and thereby creating smaller surfaces.

Satisfying results presuppose experience with this first experimental handling of the photographic medium, because the exposure times must neither be too long nor too brief. Film registers light energy all over the image and is not limited just to that originating from the lines. If a source of light or a reflection is already, for example, a line, moving the camera in a linear fashion perpendicular to this line develops a lighted surface. The blue surfaces in photo 9 originated from a steady movement of the camera to the left. Artists using other media can create, control, and correct lines directly in front of the artist's eye. For example, a drawing can be worked with pencils, charcoal, or pens, and a painting canvas with brushes, spatulas, and so on. This visible developing process is not available to users of the photographic medium, and a correction within the



5 Visual shapes, Vertical lines

image was achievable for a long time only by repeating the entire photographic procedure. Today one can decide whether another exposure is prudent or whether a correction with a computer and photo editing software might be faster and cheaper to achieve the goal. If the design elements point, line, and shape are already clearly visible in the subject, then the photographer can naturally use the possibilities of the medium to compose an image. The means for this are the choice of the focal length, point of view, and exposure time.



6 Vertical lines, Cold-warm contrast



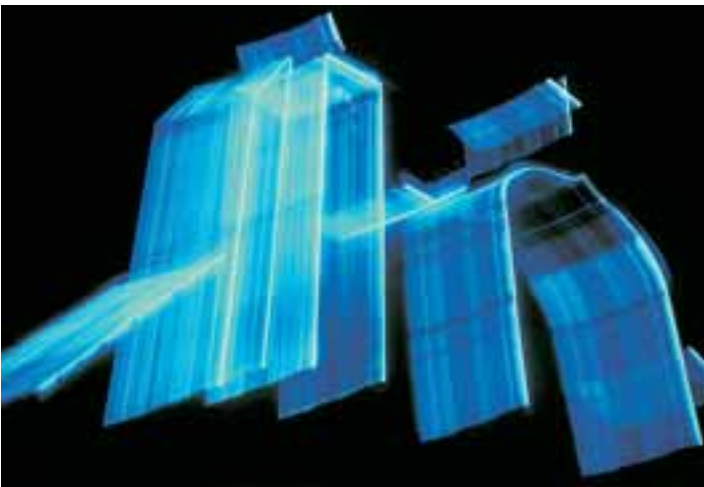
7 Horizontal lines, Brightness contrast

The Straight Line

The most basic line originates from a steady force acting to move a point in a single direction. The line runs infinitely if the force does not cease. The straight line is, therefore, the most constrained type of infinite movement. Because an image plane is a finite surface, a line can encourage one's eye to move only as far as the picture edge, and outside of the image only in an imaginary sense (diagram A). One differentiates with straight lines between three typical basic kinds: horizontals, verticals, and diagonals. Oblique straight lines (always with respect to the image surface) are deviations from these basic kinds of the straight lines. A representation of the typical basic kinds and some deviations of the straight line are shown in diagram B. The arrangement of the spokes of the wagon wheel,



8 Visual lines, Brightness contrast

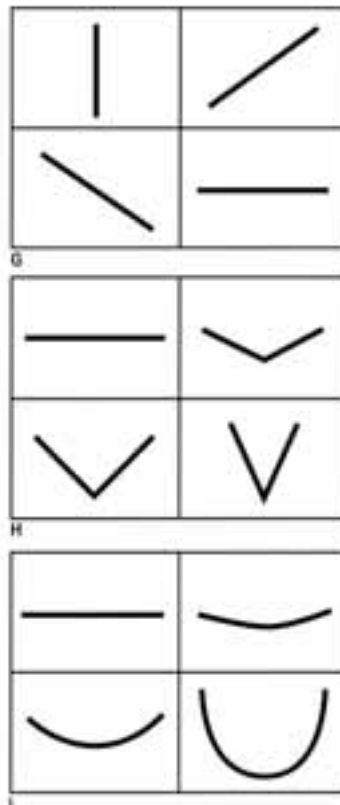


9 Brightness contrast, Color purity



10 Brightness contrast, Cold-warm contrast

the garlands, and the staves of the umbrella around a center show some of the variety of images one can achieve with similar uses of the simple straight line (photos 1, 5, 10). Also many natural subjects, such as blossoms and leaves, often have such an arrangement of straight lines, which "radiate" evenly from a center in all directions. If two forces act alternately with the same strength on one moving point, the straight line changes its direction of motion, and an active "zigzag line" (diagram C), develops from the angles. One uses these angles, among other things, in decorations and particularly in writing (photos 6, 7, 11, 16). A wavy line can be the result of the simultaneous action of several forces acting together or against each other in different directions along the track of a point's movement (diagram D and photo 17).



Diagrams G-I
Only diagonals can rise or fall and, thus, change their character. Two forces acting mutually on one point develop an angle. If several forces influence the movement of one point at the same time, straight lines are deformed into curved lines.

The diagrams G, H, and I show sections and individual variants from diagrams B, C, and D. Diagram G shows in isolation the three basic types of straight lines: the horizontal, the vertical, and the diagonal. The diagonal can appear to move in opposite directions, namely as a rising or as a falling diagonal. Diagram H shows that forces acting successively with the same strength and for the same length of time, but from different directions, produce angles of different degree measures. The diagram I shows that forces acting simultaneously, but with upward and downward directions on the movement of a point, result in evenly elbow-shaped curves. The angles and elbows with openings facing upward could "catch" or hold their contents. Angles and elbows opening downward could cover or hide something.



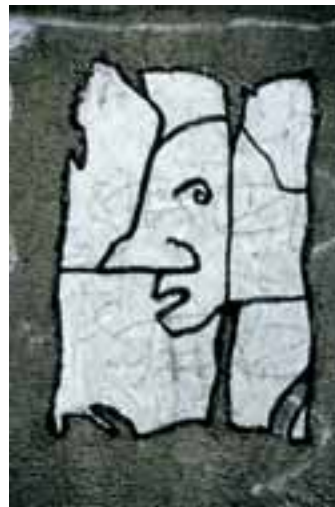
11 Brightness contrast, Cold-warm contrast

The Basic Properties of Lines

Apart from the tendency to cause the eye to follow its course, the line has two further primary properties, which nearly contradict each other, but arise simultaneously nonetheless. These are the properties of dividing surfaces or shapes and of forming new surfaces or shapes from those divisions. In the instant that a line forms on a surface, that line divides the surface. This division develops simultaneously new, smaller surfaces (photo 12). Dividing a square or rectangular surface with a horizontal or vertical line creates two smaller rectangular surfaces. Diagonals divide a rectangular surface into two triangles. Any line that traverses an image plane from one edge to any other edge without crossing or touching another line divides the image space



12 Warm color balance



13 Brightness contrast

into two secondary shapes. A closed loop (a line that returns to its starting point) that does not touch any edge or cross itself also divides the image space into two secondary shapes (diagram E and photos 15 and 16). If a line in its progression from one picture edge to another picture edge crosses itself once, the primary surface area is divided into three parts of different shapes and sizes (diagram F and photo 14). If a closed curve crosses itself once, for instance forming a figure "8", then three shapes result: two inside the loops of the eight and one outside of the eight. Secondary shapes, which result exclusively from the dividing property of lines, become what are called "line-active" surfaces or shapes. It is characteristic of line-active surfaces that the color, texture, and tone are identical inside and outside the shapes formed



14 Texture



15 Brightness contrast, Texture



16 Brightness contrast, Texture



17 Brightness contrast, Contrast of lines

by lines (photos 4, 14-16). Varying the color, texture, or tone of a secondary shape will increase its visual weight (photo 13).

Visual Shapes

A straight line can cause only a simple, direct surface division. Only a line whose direction changes several times in its progress on a surface can form additional visual shapes that are more or less obvious to the viewer's eye (photos 2, 3, 7, 16, 17). Besides dividing space, lines create shapes. Shapes are complete when a line returns to its starting point either by intersecting two edges of the image frame or by forming a closed loop. However, lines often change direction or stop before completely forming a shape. In such cases, if the ends of the line are sufficiently close,

the eye will step in to supply the missing section to complete the shape. With the "zigzag line" in diagram C it is not difficult to see roof-shaped triangles as well as triangles standing on points. In each case the eye fills in the imaginary third edge of the triangles with relative ease. The eye does not see so clearly, though, the optical semicircles that would close the curves in the wavy line in diagram D. The quality of the picture's composition depends also on the visual shapes that develop between lines or other shapes. This effect may neither be ignored nor forgotten during the work. These visual shapes should not be too small in relation to the picture area. If they are, they may create instability in the composition. The ideal situation is for one large visual shape to contrast with other, smaller ones. When photographing live, active

subjects, it is advisable to take several photographs in order to achieve an optimal interaction between lines, shapes, and visual shapes (optical forms) (photo 2).



1 Point, Vertical lines, Brightness contrast, Quantity contrast

Horizontal Lines in Landscape and Portrait Formats

The horizontal line is one of the symbols for balance. It is a symbol for absolute equilibrium. Our visual experiences with distant, open landscapes and seascapes program our minds to associate the horizontal line primarily with landscapes (scenery) and the horizon line. At the same time the horizontal line as a horizon signifies distance and a feeling of coolness.

Format Choice and Surface Division

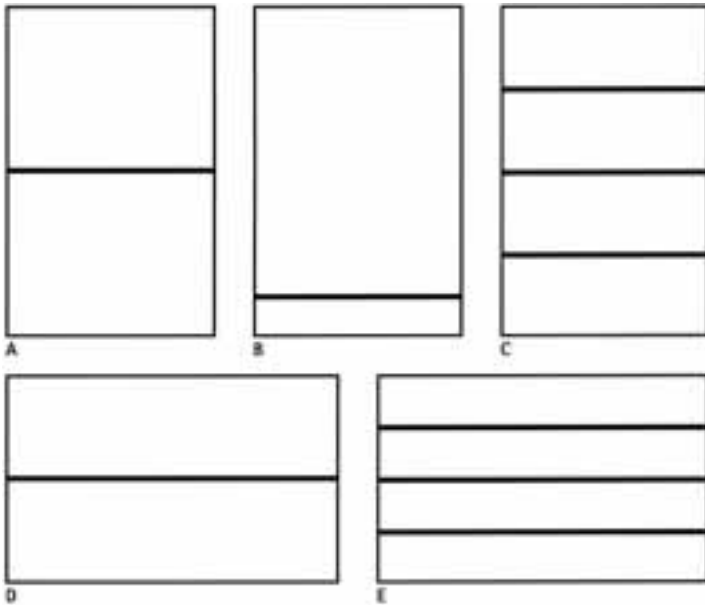
Our visual field has a predominantly horizontal aspect because our eyes lie next to each other horizontally. Rotating one's head to the left or right easily doubles the extent of the visual field (and becomes a panorama). This property of the human visual experience will often transfer to the choice of the picture format. During the conversion of 3-dimensional subjects to 2-dimensional pictures, the landscape format is used most commonly. The landscape format is the traditional format for landscape pictures. The rectangular image plane in the landscape format has an inherent visual stress between the horizontal upper and lower picture edges in relation to the left and right vertical picture edges. This stress between the horizontal



2 Brightness contrast, Visual lines



3 Dominant point



4 Visual lines, Quantity contrast

Diagrams A-E
 A viewer's initial reaction to a horizontal line in an image is as the "horizon". The horizon line can be placed anywhere in the entire height of the image plane. In the portrait format a horizontal line strengthens the visual impact of a surface division. Without a visible horizon in the picture, the upper or the lower picture edge can become the "artificial horizon".

edges of pictures in the landscape format emphasizes the effect of a horizon or other horizontal lines within a subject. A single horizontal line in a picture gives the impression of a natural horizon. The horizontal, as a cool, restful line, is most appropriate for the landscape format, which already possesses the same cool characteristic. The movement space of a horizontal line reaches obviously from the left to the right picture edges of a format. Besides, it is logical that a horizontal line is longer in the landscape format than in the portrait format. For the viewer the horizontal line in the landscape format has a sufficient space for free eye movement, while visual motion in the portrait format is stopped by the right picture edge. The strength of the surface division, which is a function of lines of all kinds, is most clear with short straight distances. Thus the horizontal



5 Brightness contrast, Contrast of contours



6 Clusters of points, Cold-warm contrast



7 Brightness contrast, Simultaneous contrast

line in the portrait format has a stronger surfacedividing character. A centered horizontal line in the portrait format forms two stubby rectangles that develop a clear visual stress between the upper and lower halves (diagram A, photo 10). The 35mm picture format has external proportions of 2:3 (24x36mm), which approximate the harmonious measure conditions of the golden section. The 35 mm frame used in the portrait format gives a visual impression of being somewhat narrow relative to the height, or a bit tall relative to the width. Successive horizontal divisions reduce this mildly unsettling visual effect. This is particularly the case with a horizon placed relatively low in the frame to show lots of sky (diagram B and photos 4, 9) or a horizon placed near the upper picture edge (photos 6, 11). Numerous horizontal lines in a portrait format

divide the image space into narrow rectangles or strips lying one on top of another and enhance the impression of breadth (diagram C, photos 18, 19). This situation creates a visual conflict between the cool, horizontal lines and the warm, vertical format. At two points on the height of a portrait format, a horizontal line can divide the surface into square and rectangular compartments (diagrams F and G), wherein the "down" is stressed when the square is at the bottom (the foreground, the landscape, photo 5) and the "above" in the other case (the sky). In the landscape format a centered horizontal line divides the format into two narrow rectangles in the aspect ratio of 1:3 (diagram D and photos 12, 13, 15). If still more horizontal lines are added, then they divide the surface into very narrow rectangles or strips (diagram E

and photo 16). A number of horizontals in the landscape format suggest depth and lead the eye into the most remote areas of the picture.

Real and Artificial Horizons

The "absolute horizon" is that perfect horizontal line of a water surface lying in the far distance or a perfectly level. The line along the upper edge of a mountain range, a hilly landscape, or even a forest lying in the distance will never be perfectly horizontal, but can only yield the impression of a "horizon". In addition there are many subjects with graduated, multilevel horizons (photo 2). The effect of a horizon does not only result from landscape subjects. The impression of a horizon will transfer easily to other horizontal lines and

elements so that a feeling of a so-called "artificial horizon" can develop. In the two following cases one of the picture edges becomes the artificial horizon. With landscape photographs in the landscape format taken from a high point of view that lack a horizon line, the upper (horizontal) picture edge acquires the character of a horizon (photo 3, 7, 14). In photographs of the sky without a visible landscape detail, it is the lower picture edge which comes to replace the horizon. With the portrait format the horizontal picture edges are so short, that the effect of an artificial horizon develops only very rarely (photo 17).



8 Monochrome color balance, Quantity contrast



9 Brightness contrast,
Contrast of contours



10 Complementary contrast,
Cold-warm contrast



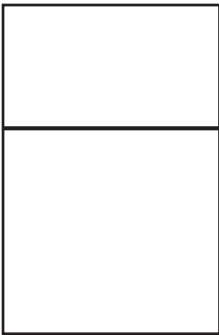
11 Dominant point, Textural detail

Harmony and Tension

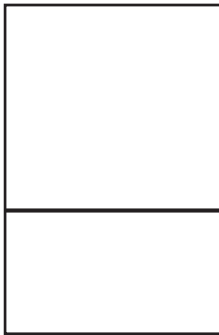
To achieve harmonious divisions of lines or surfaces, it often helps to use the proportions of the golden section. The height of each format contains two points at which the surface can be divided harmoniously by a horizontal line. These points are at different heights within the image plane. The choice for one of the two points depends on the desired height of the horizon, coupled with the decision to stress the foreground or the sky. To find these points is very simple. Folding a piece of paper in half three times divides its width or height into eight rectangular segments (diagrams H and I). These form the basis for the harmonious ratio of 3:5. Three units below the upper picture edge or three units above the lower picture edge mark the harmonious divisions after the golden section.



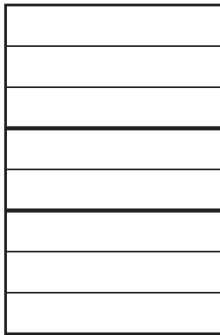
12 Visual lines, Quality contrast



F

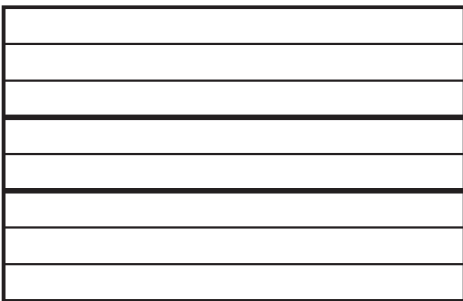


G



H

Diagrams F-I
The middle position for the horizon line is generally to be avoided, especially in the portrait format. Harmonious surface divisions can be found according to the golden section.



I



13 Brightness contrast, Cool color balance



14 Brightness contrast, Cool color balance



15 Dominant point, Complementary contrast



16 Dominant point, Oblique lines



18 Points, Vertical lines



19 Visual lines, Cold-warm contrast



17 Cold-warm contrast

With the 2:3 aspect ratio of the 35mm format, in the portrait mode, these points are nearly identical to those forming a square within the rectangular image frame (diagrams F, G), the squares are approximately 10% shorter in height than the 5:8 position). The division into eight units also marks the center of the surface – for a horizon placement which should often be avoided. The critical points for a surface division with harmonious tensions lie in each case a unit over or under the center (diagrams H and I). A mid-positioned horizontal line causes a division of the image frame lacking in visual tension, until other compositional elements that are above or below the horizon or the horizontal line are taken into consideration (photos 1, 10, 12, 13, 15). All other placements of a horizon or a horizontal line in the image plane vary from being

rich to very rich in visual tension. For example, the decision to place a horizon very close to the lower or the upper picture edge creates strong visual tension (photos 4, 6, 8, 9, 11).