

FORMAL COMPOSITIONS

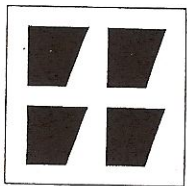
A formal composition generally contains an underlying mathematical structure that rigidly governs the positions and the directions of elements. Rules are predetermined; nothing is left to chance. Elements are either arranged in repetition, or according to shape, size, position, direction, and/or color.

A formal composition does not always become a pattern. Overall patterns, however, are invariably based on formal compositions—the occurrence of a group of forms is predictable.

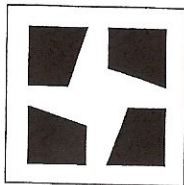
Slight deviation from the rigid rules of a formal composition results in a *semi-formal* composition, which contains anomalous elements, or loosely follows the predetermined rules.

The four ways of producing formal compositions are based on mathematical concepts of symmetry. Their combined use can lead to numerous variations. These include:

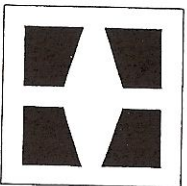
- a. *translation*, or the change of position (fig. 25)
- b. *rotation*, or the change of direction (fig. 26)
- c. *reflection*, or creating a mirror image of the shape (fig. 27)
- d. *dilation*, or the change of size (fig. 28)



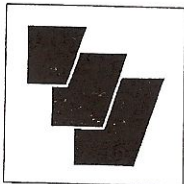
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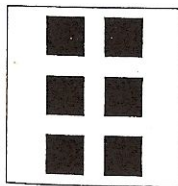
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Translation

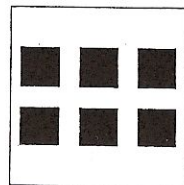
The translation of a shape changes its position. The direction of the shape, however, remains unchanged. Translation is the repetition of a shape in a design. In formal compositions, translated shapes are regularly spaced. Translations can be vertical (fig. 29), horizontal (fig. 30), diagonal (fig. 31), or a combination of these (fig. 32).

The distance between shapes can be measured, once a satisfactory arrangement is obtained, by using one corner of the shape as a guide. This results in a structural grid, which serves to regulate the final design (fig. 33).

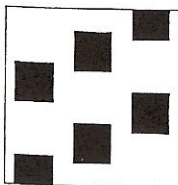
Figure 34 illustrates planes in translation.



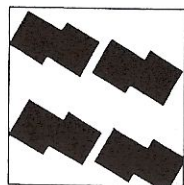
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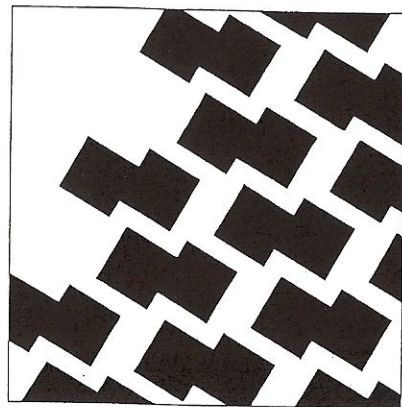
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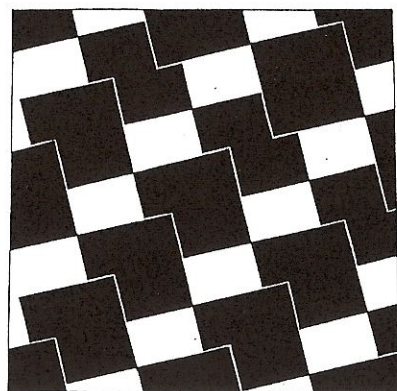
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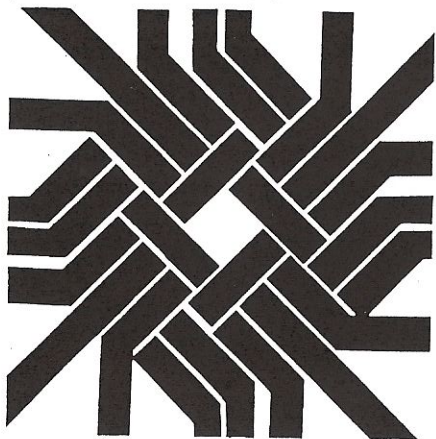
Rotation

The rotation of a shape results in a change in its direction. In most cases, rotation also results in a change of position, so rotated shapes are not superimposed.

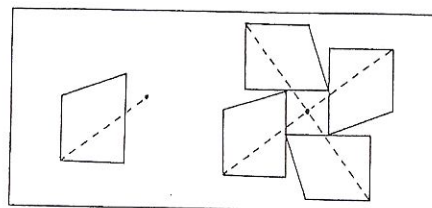
Shapes radiate when they are rotated regularly about a *center of reference*. Each shape should be positioned on an imaginary axis, at equal distance from the center of reference, before rotation is effected.

Figures 35 through 38 show how four shapes are arranged in a ninety-degree rotation, resulting in formal compositions. (Broken lines represent axes, and points represent centers of reference in these diagrams.)

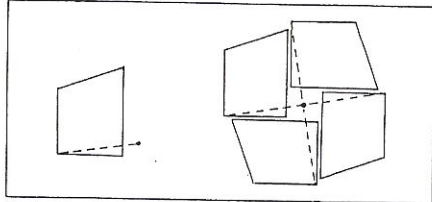
Figure 39 is a finished design composed of lines in rotation.



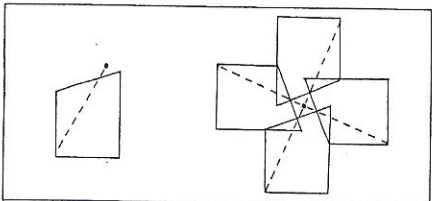
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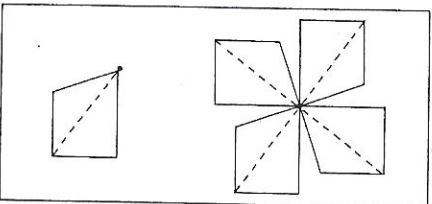
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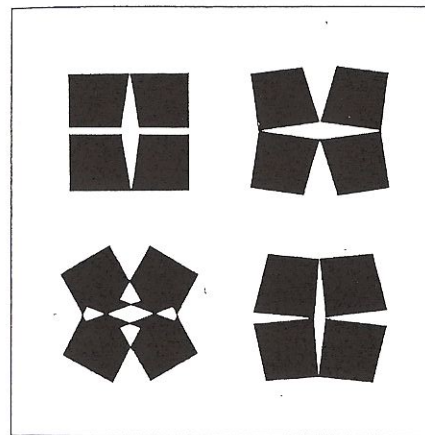


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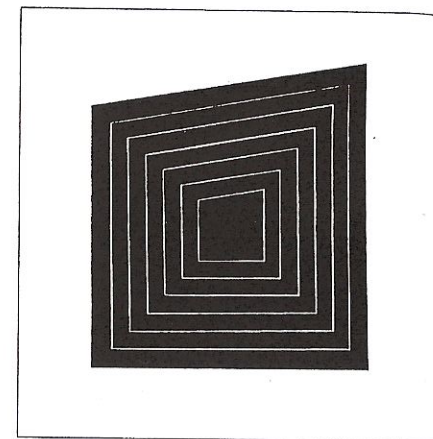
Reflection



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The reflection of a shape or a group of shapes can result in *bilateral symmetry* (a mirror image of the original shape or shapes). The original shape must be asymmetrical, because the mirror image of a symmetrical shape is no different from the original. The overall shape of a group of shapes to be reflected should be asymmetrical as well. Reflected shapes can also be translated and rotated (fig. 40).

Dilation



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Dilation effects changes in the *size* of shapes. The dilation of a shape that is not translated produces a regular, concentric design (fig. 41).

Dilation can be used to move shapes forward or backward in space: smaller shapes appear to be farther away; larger shapes seem closer to the viewer.

Informal compositions do not depend on mathematical calculations, but on an eye sensitive to the creation of asymmetrical balance and general unity with freely arranged elements and shapes.

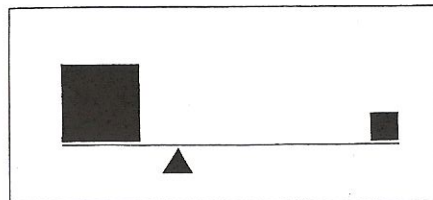
No definite procedures exist, but the following may be used as criteria for evaluating informal compositions:

a. gravity—the weight and balance of shapes (fig. 42)

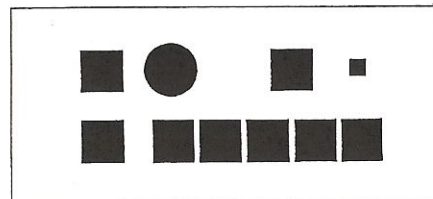
b. contrast—the visual (characteristics of shape and color), dimensional, or quantitative differences that distinguish one shape, part of a shape, or group of shapes from another shape, another part of the same shape, or another group of shapes (fig. 43)

c. rhythm—the suggested movement and velocity, similar to melodic developments in music (fig. 44)

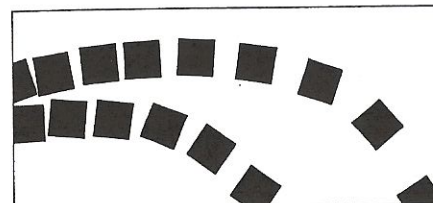
d. center of interest—a focal point that either catches the viewer's eye or defines the place of convergence, divergence, or climax of rhythmic forces (fig. 45)



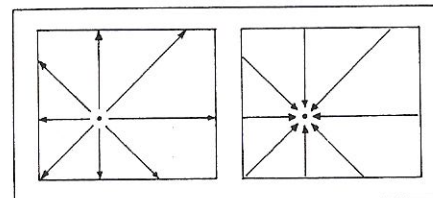
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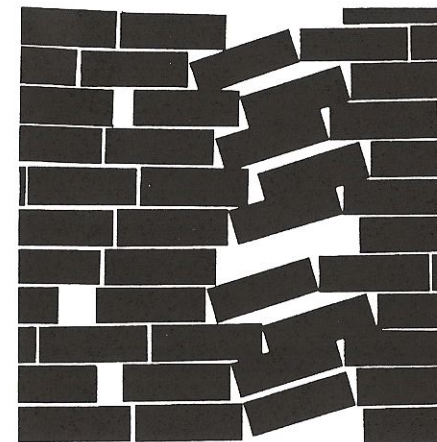
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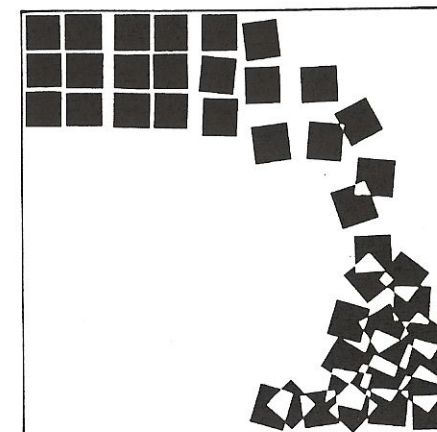
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A designer manipulates how the weights of shapes are perceived by the viewer. Dark shapes among lighter ones on a white background, large shapes among smaller ones, tend to appear heavier. In addition, all shapes seem to be subject to a gravitational pull toward the lower edge of a design.

Gravity affects the balance of elements in a composition. Heavy shapes could be balanced with light shapes, one shape with a group of shapes. A perfectly balanced design, with each shape in its proper place, would be upset by an addition, subtraction, or the transposition of a single shape. It might also seem out of balance when viewed sideways or upside-down.

The effects of gravity can also be approximated to create stable and unstable shapes. Stable shapes have wide bases that are parallel to the bottom of the design. Unstable shapes have pointed or narrow bases. Stable shapes can be tilted to appear less stable; unstable shapes can become stable with the support of other shapes.

Rhythm



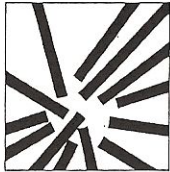
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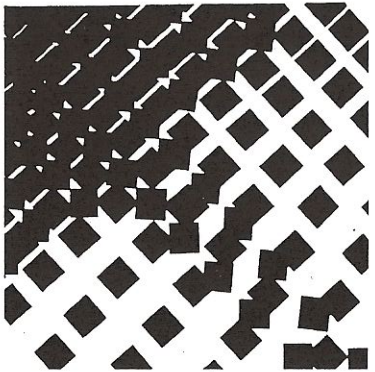
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A representational design often describes a subject or theme, whereas abstract designs are frequently inspired by an idea—an event, movement, or a natural phenomenon that can be rhythmically expressed.

We are surrounded by rhythms that can be expressed as designs: ripples on a lake; birds in flight; trees spreading their branches; flowers in full bloom; clouds moving across the sky; sand scattering on a beach; a fountain spouting water; waves pounding on rocks; the bounce of a ball; an explosion of dynamite.

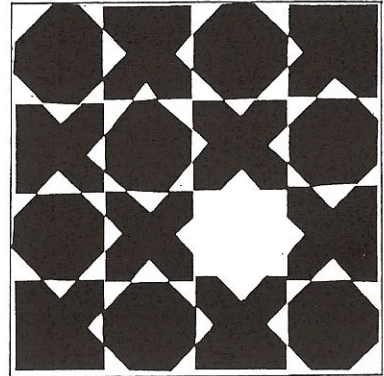
Abstract designs that are inspired by such ideas are not merely decorative. More important than whether or not the idea is apparent to viewers is the spirit and rhythm with which the design is infused. In addition, the idea reflects a designer's personal vision and may foster creativity.

Rhythm is generated by manipulating the directions of and spaces between elements, which may be parallel, similar, contrasting, or radiating (figs. 50–53). Wide and narrow spaces between elements suggest the velocity of movement (fig. 54).

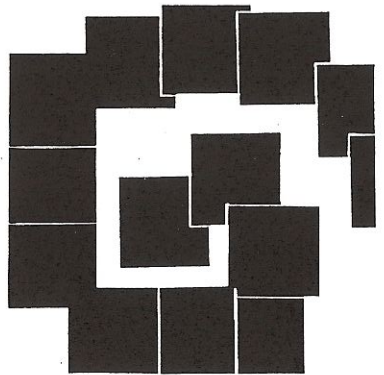
An informal composition must coordinate its elements around a center of interest—an area where all elements originate, cease, or interact, providing the visual drama without which the design becomes a mere conglomeration of parts (fig. 55).

A formal composition, on the other hand, does not necessarily include a center of interest, particularly if there is an overall pattern based on regular translation. A radiating design based on rotation, however, will have an obvious center of reference, and a central axis underlies designs of bilateral symmetry based on reflection. When an anomaly is introduced into a formal design, it usually becomes the center of interest of what becomes an informal composition (fig. 56).

Although a center of interest may appear in almost any part of a design, it tends to make the design static at the geometrical center; if placed at one of the four corners of a square or rectangular design, the uneven distribution of weight can upset the balance.



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