Tishk International University
Engineering Faculty
Interion Design Department

LECTURE 2: FORM

1ST STAGE

SPRING SEMESTER

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Lecture content

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Form

"Architectural form is the point of contact between mass and space … Architectural forms, textures, materials, modulation of light and shade, color, all combine to inject a quality or spirit that articulates space. The quality of the architecture will be determined by the skill of the designer in using and relating these elements, both in the interior spaces and in the spaces around buildings."

Edmund N. Bacon

The Design of Cities 1974

Definition of Form

Form is an inclusive term that has several meanings:

- It may refer to an external appearance that can be recognized, as that of a chair or the human body that sits in it.
- It may also allude to a particular condition in which something acts or manifests itself, as when we speak of water in the form of ice or steam.
- In art and design, we often use the term to denote the formal structure of a work—the manner of arranging and coordinating the elements and parts of a composition so as to produce a coherent image.

Form

In the context of this study, form suggests reference to both internal structure and external outline and the principle that gives unity to the whole. While form often includes a sense of three-dimensional mass or volume, shape refers more specifically to the essential aspect of form that governs its appearance—the configuration or relative disposition of the lines or contours that delimit a figure or form.

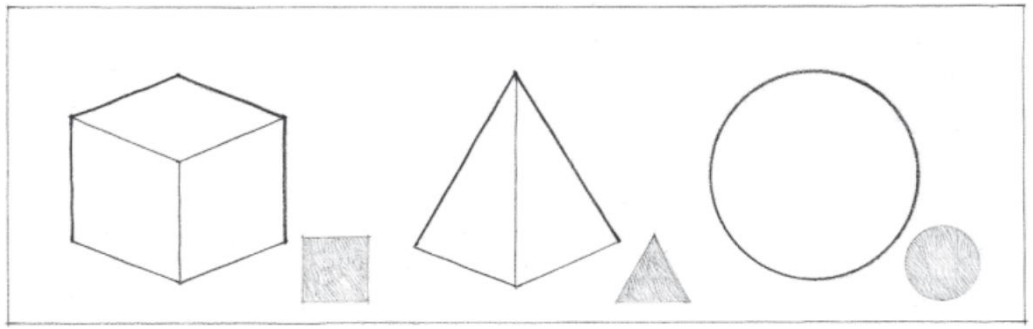
In the visual arts, shape is a flat, enclosed area of an artwork created through lines, textures, or colors, or an area enclosed by other shapes, such as triangles, circles, and squares. Likewise, a form can refer to a three-dimensional composition or object within a three-dimensional composition.

Properties of form

1. Shape

Shape is the characteristic outline or surface configuration of a particular form.

Shape is the principal aspect by which we identify and categorize forms.



Properties of form

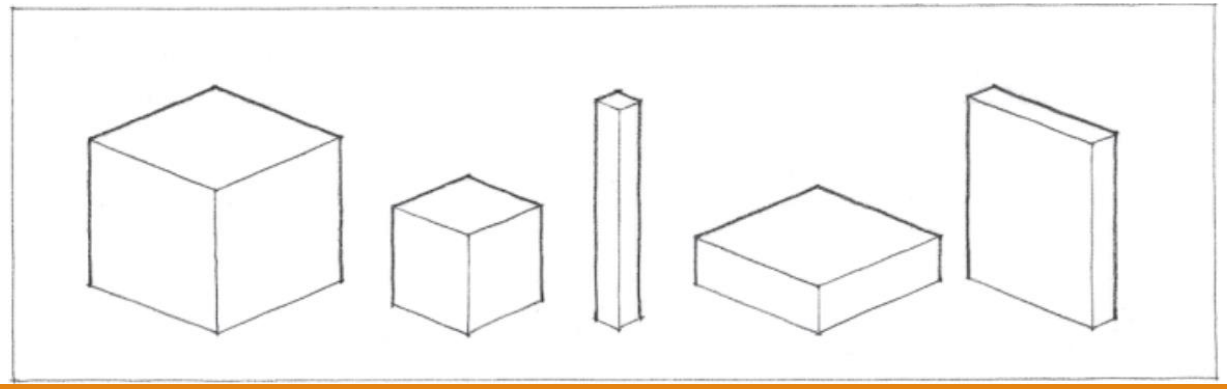
1. Shape

Properties of form

2. Size

Size is the physical dimensions of length, width, and depth of a form.

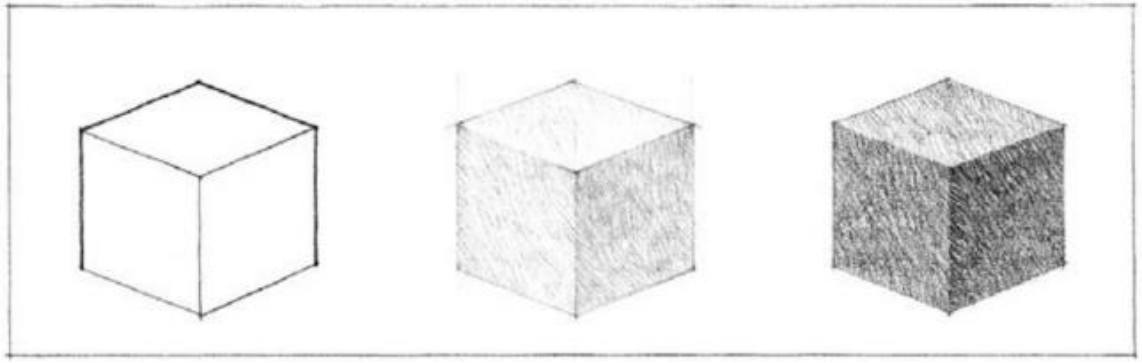
While these dimensions determine the proportions of a form, its scale is determined by its size relative to other forms in its context.



Properties of form

3- Color

- A phenomenon of light and visual perception that may be described in terms of an individual's perception of hue, saturation, and tonal value.
- Color is the attribute that most clearly distinguishes a form from its environment. It also affects the visual weight of a form.

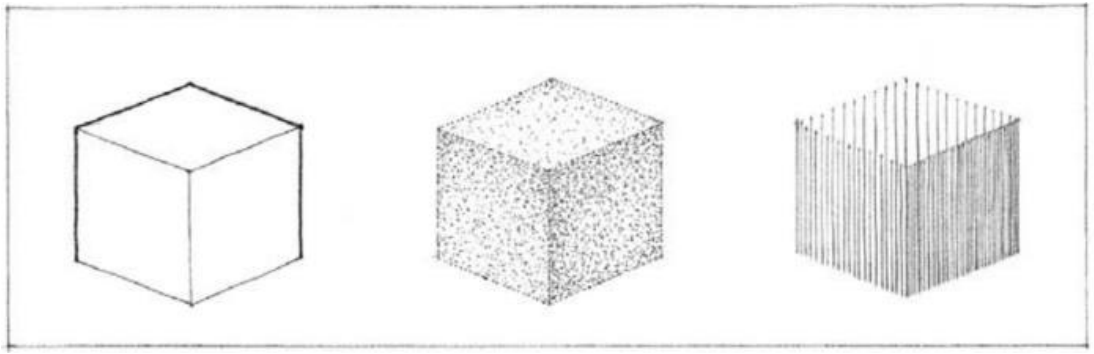


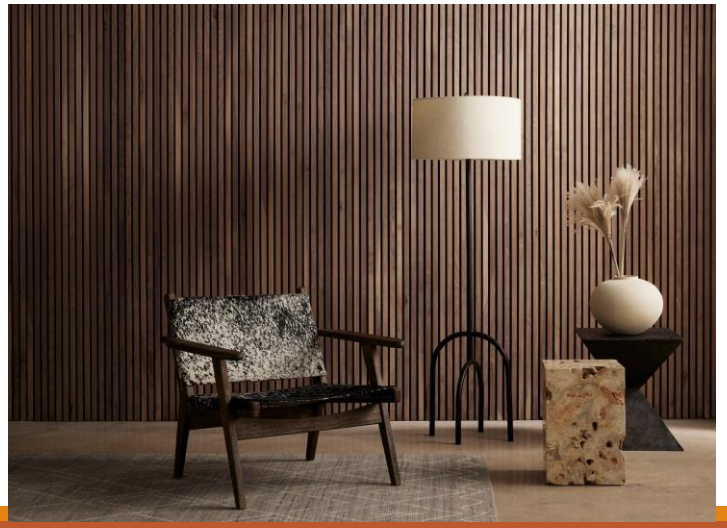
Properties of form

4. Texture

The visual and especially tactile quality given to a surface by the size, shape, arrangement, and proportions of the parts.

Texture also determines the degree to which the surfaces of a form reflect or absorb incident light

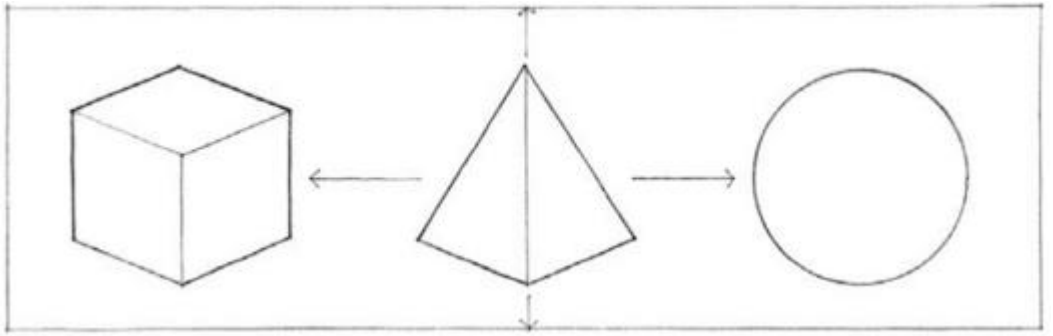




Relational Properties of form

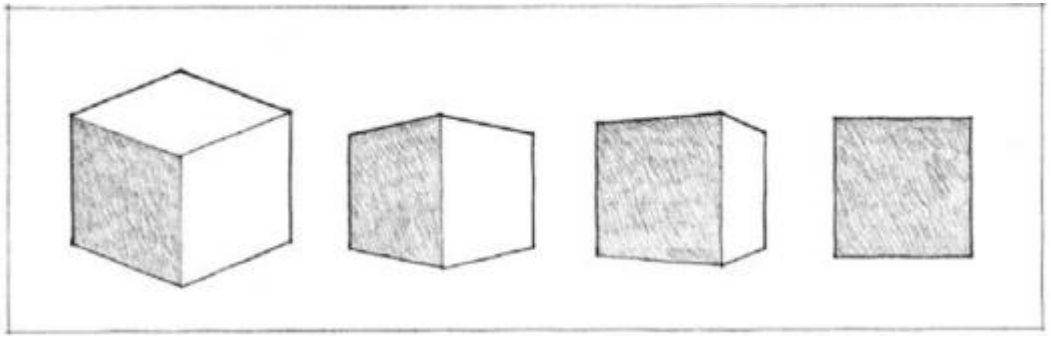
1. Position

The location of a form relative to its environment or the visual field within which it is seen



2. Orientation

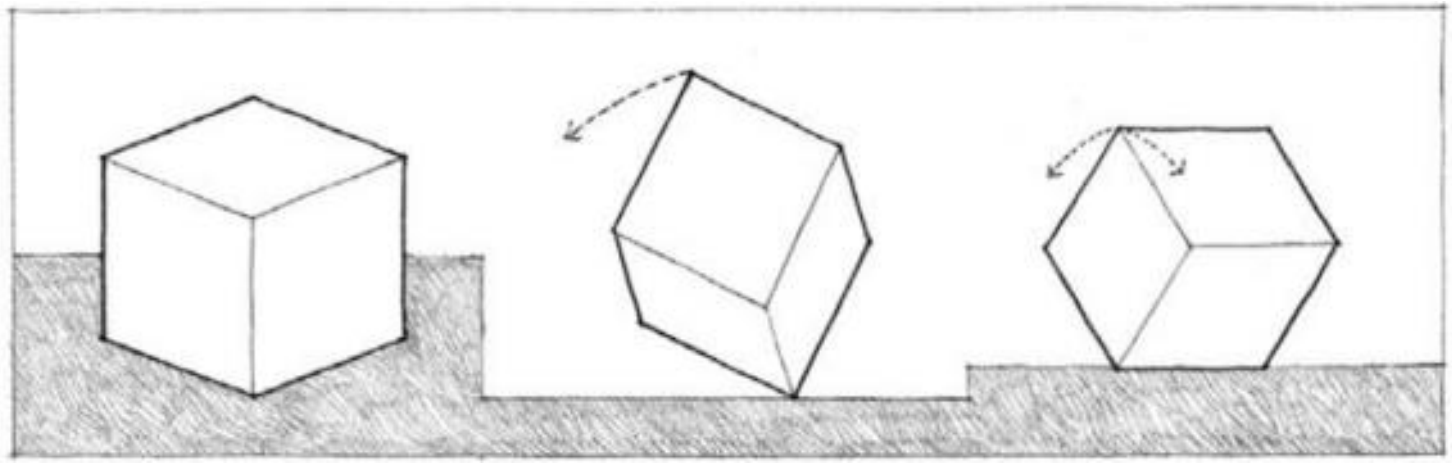
The direction of a form relative to the ground plane, the compass points, other forms, or to the person viewing the form.



Relational Properties of form

3. Visual Inertia

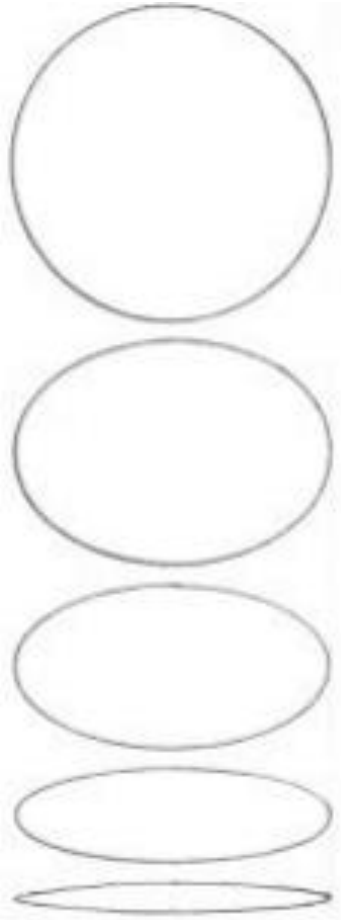
The degree of concentration and stability of a form.



Summary of the properties of a form

All of these properties of form are in reality affected by the conditions under which we view them:

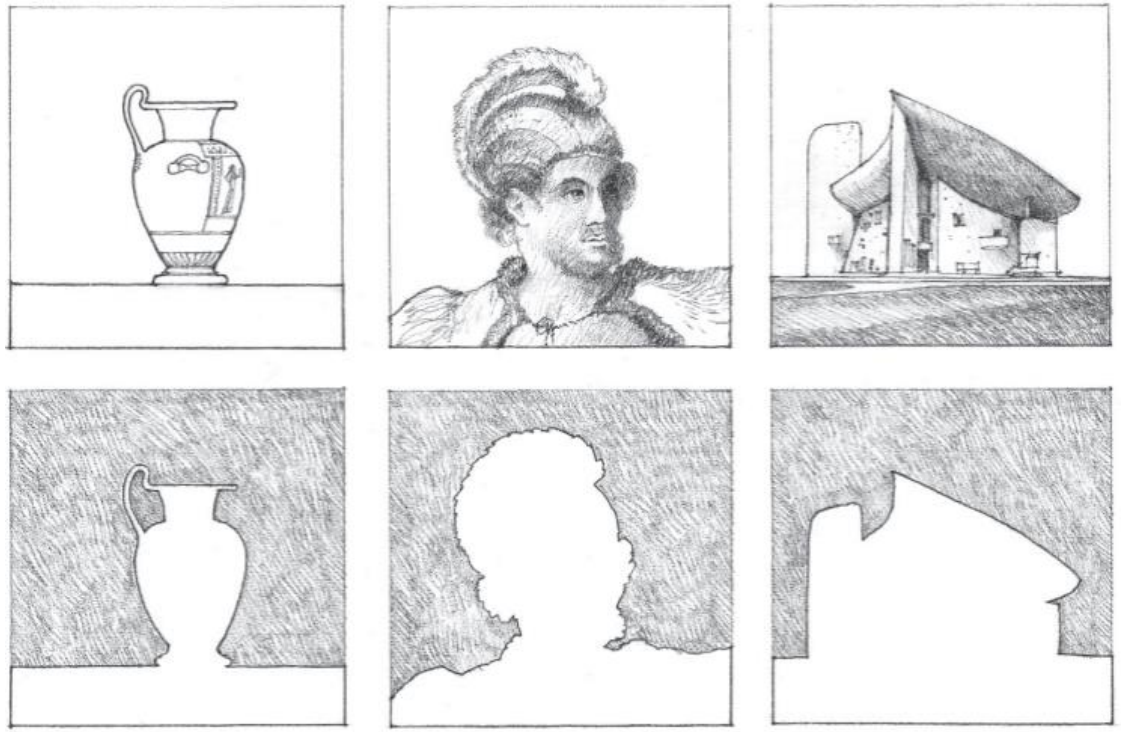
- A changing perspective or angle of view presents different shapes or aspects of a form to our eyes
- Our distance from a form determines its apparent size
- The lighting conditions under which we view a form affect the clarity of its shape and structure.
- The visual field surrounding a form influences our ability to read and identify it.



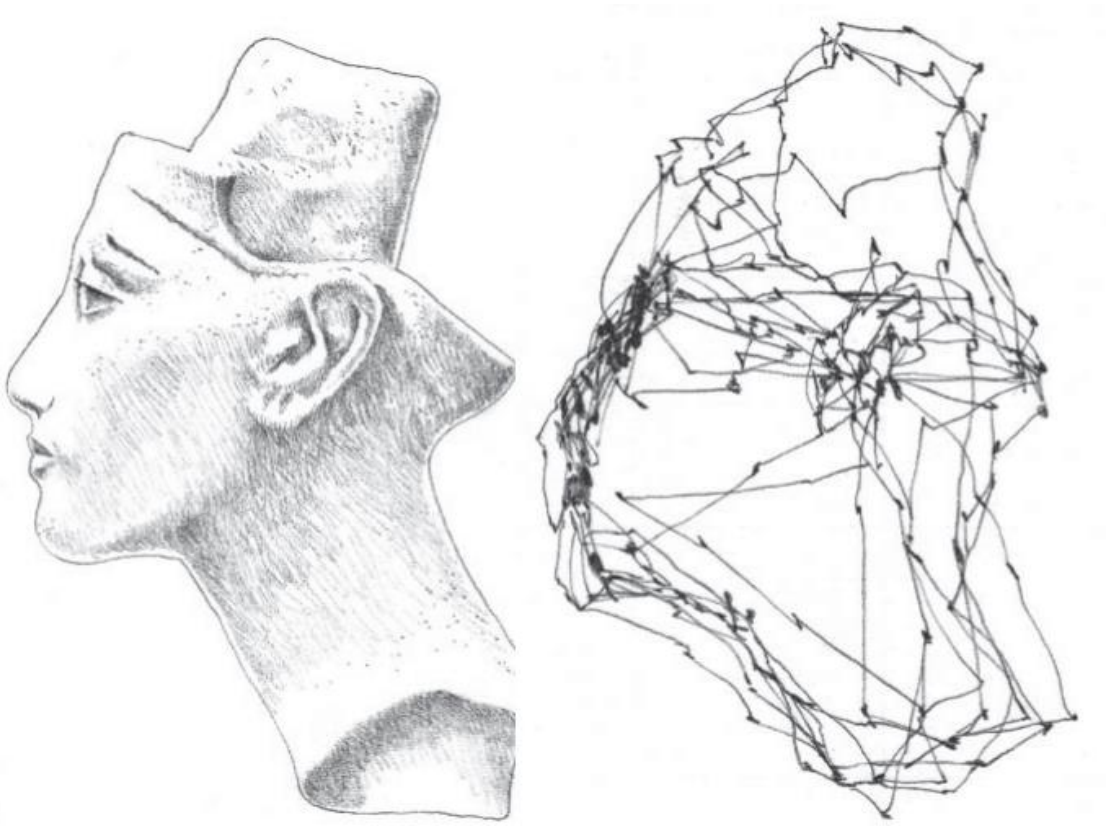
1. Shape

Shape refers to the characteristic outline of a plane figure or the surface configuration of a volumetric form. It is the primary means by which we recognize, identify, and categorize particular figures and forms.

Our perception of shape depends on the degree of visual contrast that exists along the contour separating a figure from its ground or between a form and its field.



1. Shape

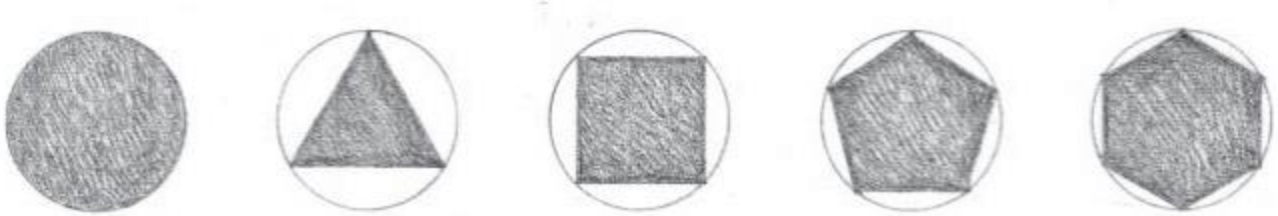


Shapes are determined by their outline

Bust of Queen Nefertiti The pattern of eye movement of a person viewing the figure, from research by Alfred L. Yarbus of the Institute for Problems of Information Transmission in Moscow

Primary Shapes

From geometry we know the regular shapes to be the circle, and the infinite series of regular polygons that can be inscribed within it.



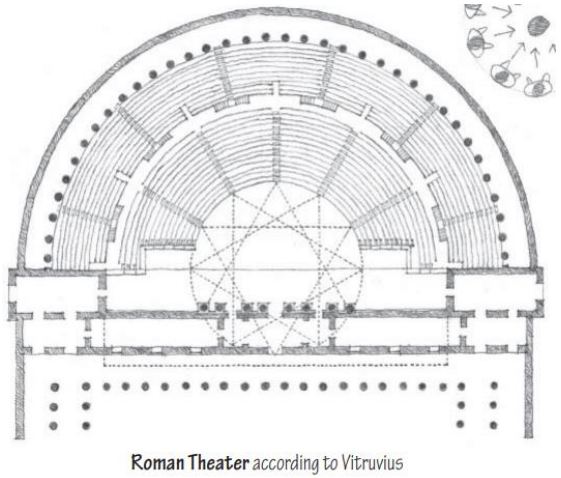
Of these, The most significant are the primary shapes: the circle, the triangle, and the square

Primary Shapes

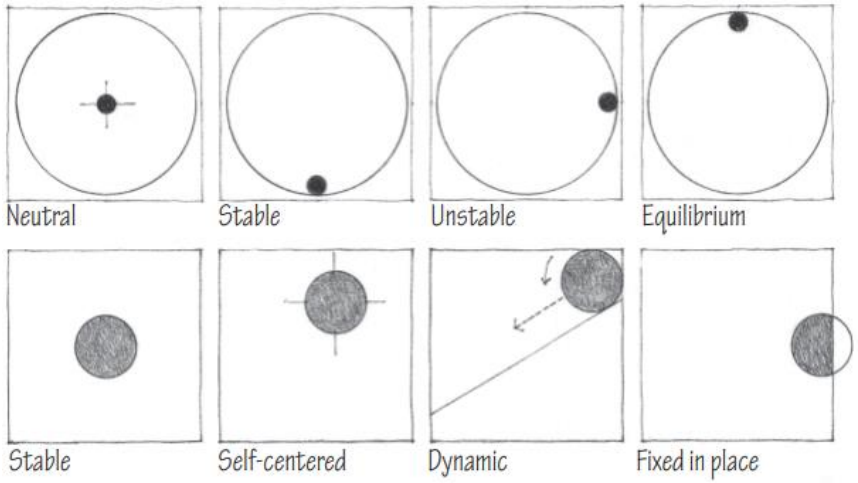
A- Circle

A plane curve every point of which is equidistant from a fixed point within the curve

The circle is a centralized, introverted figure that is normally stable and self-centering in its environment. Placing a circle in the center of a field reinforces its inherent centrality. Associating it with straight or angular forms or placing an element along its circumference, however, can induce in the circle an apparent rotary motion

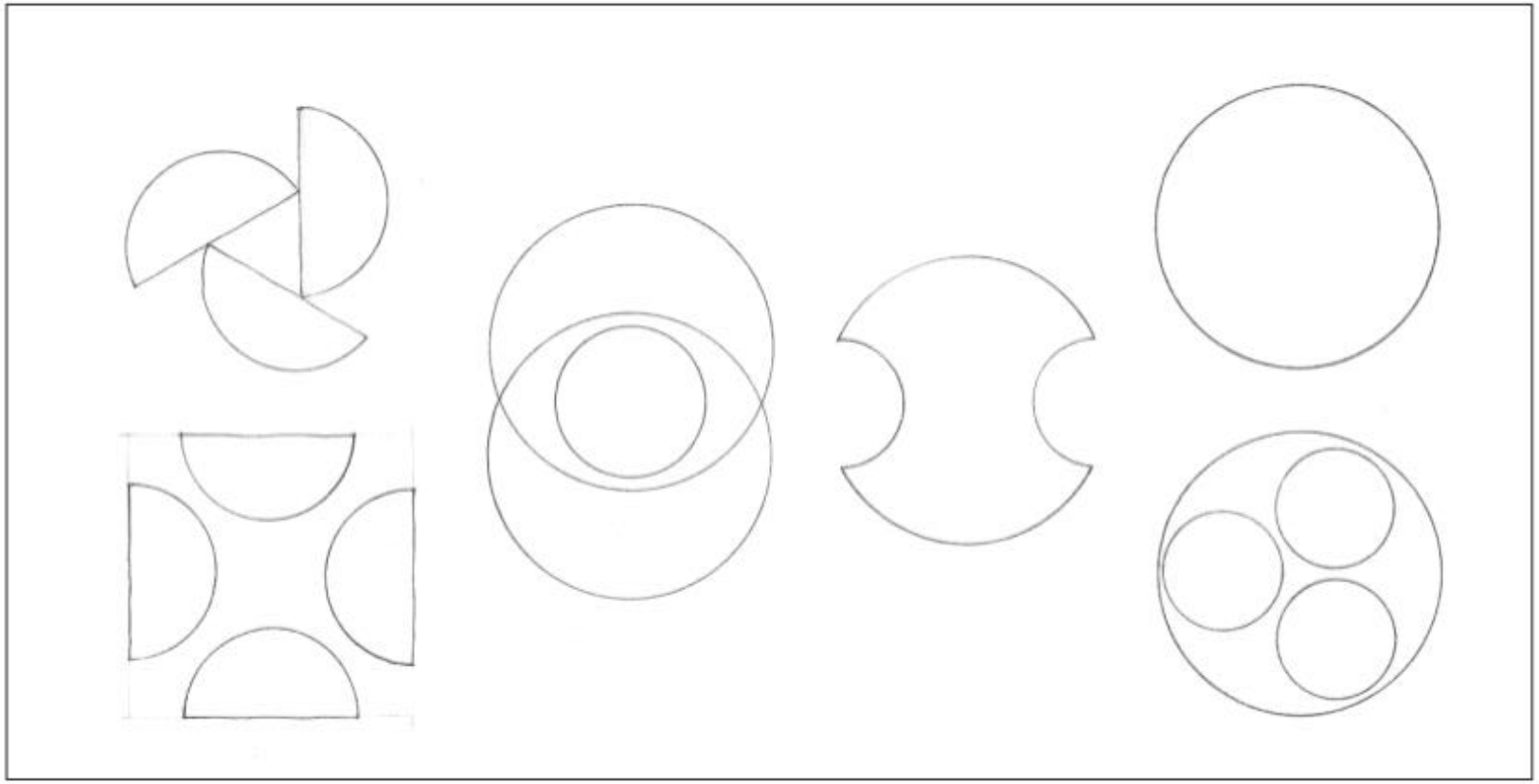


Roman Theater according to Vitruvius



Primary Shapes

A- Circle



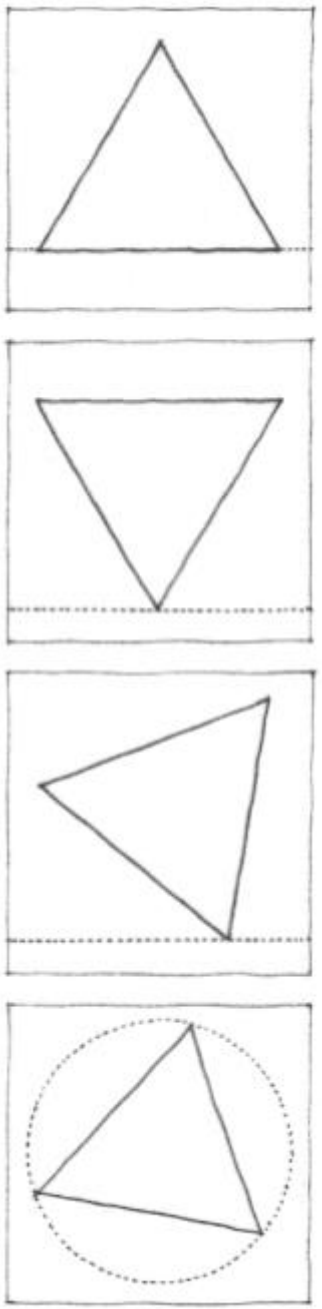
Compositions of circles and circular segments

Primary Shapes

B- Triangle

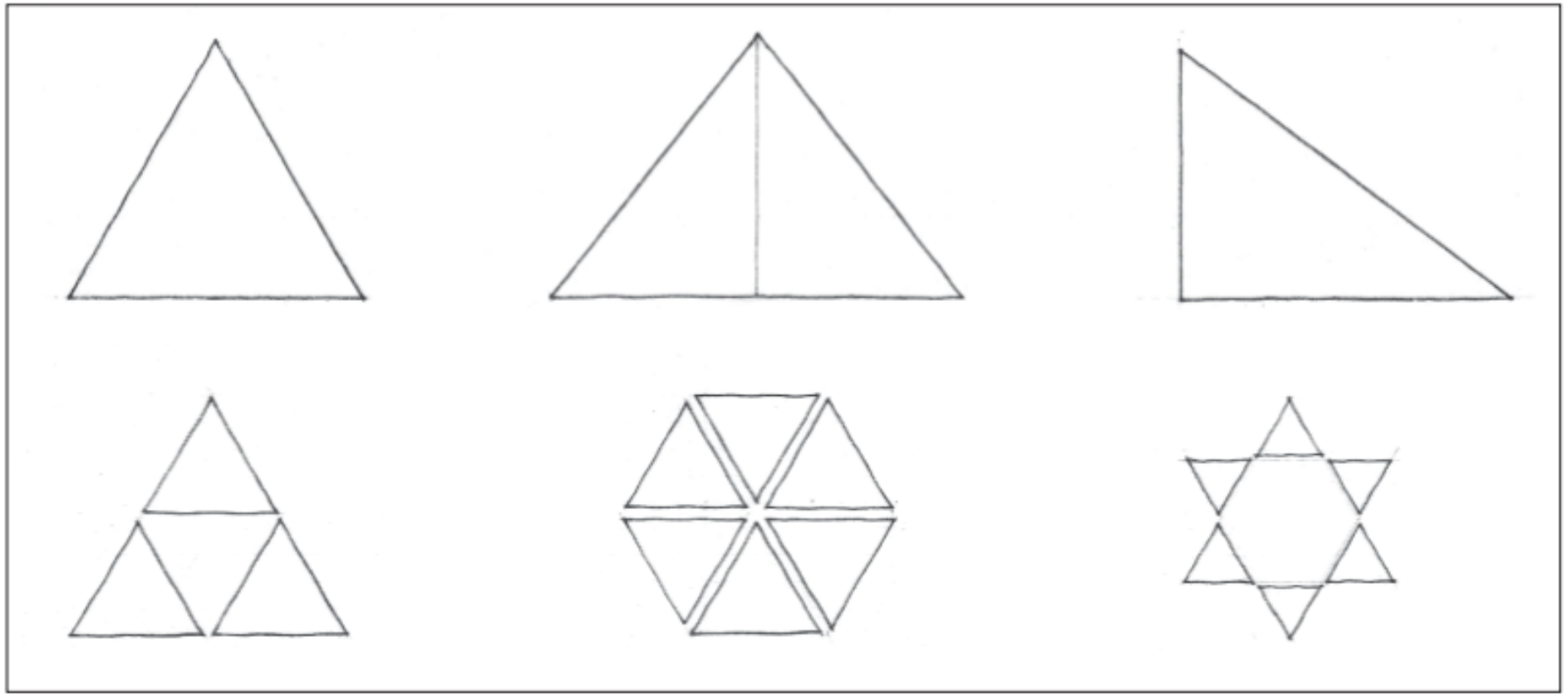
A plane figure bounded by three sides and having three angles

The triangle signifies stability. When resting on one of its sides, the triangle is an extremely stable figure. When tipped to stand on one of its vertices, however, it can either be balanced in a precarious state of equilibrium or be unstable and tend to fall over onto one of its sides.



Primary Shapes

B- Triangle



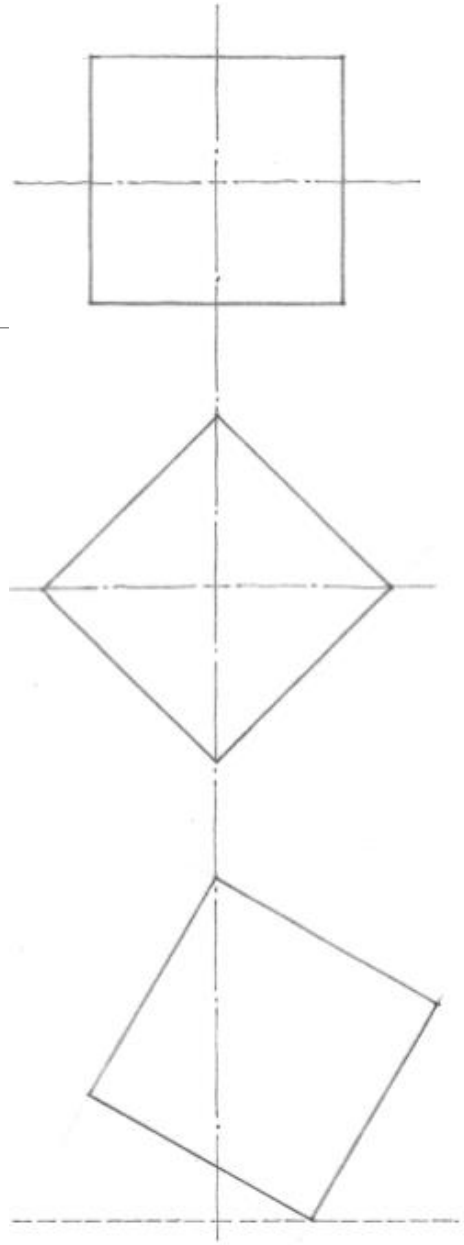
Compositions of Triangle

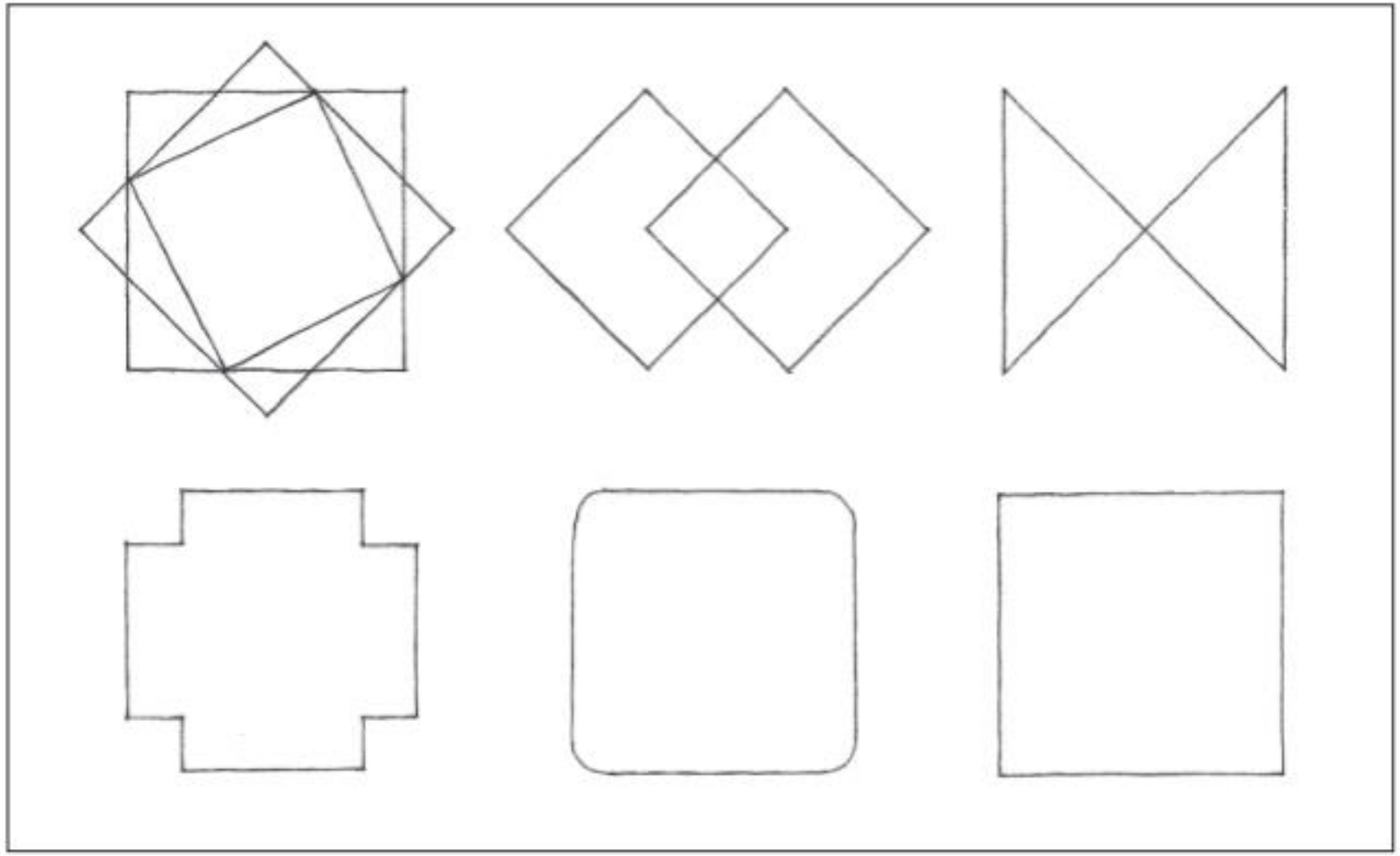
Primary Shapes

C- Square

A plane figure having four equal sides and four right angles.

The square represents the pure and the rational. It is a bilaterally symmetrical figure having two equal and perpendicular axes. All other rectangles can be considered variations of the square—deviations from the norm by the addition of height or width. Like the triangle, the square is stable when resting on one of its sides and dynamic when standing on one of its corners. When its diagonals are vertical and horizontal, however, the square exists in a balanced state of equilibrium.





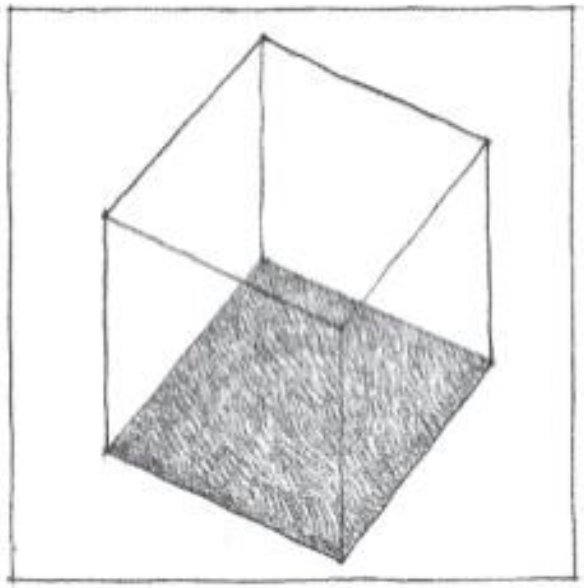
Compositions resulting from the rotation and modification of the square

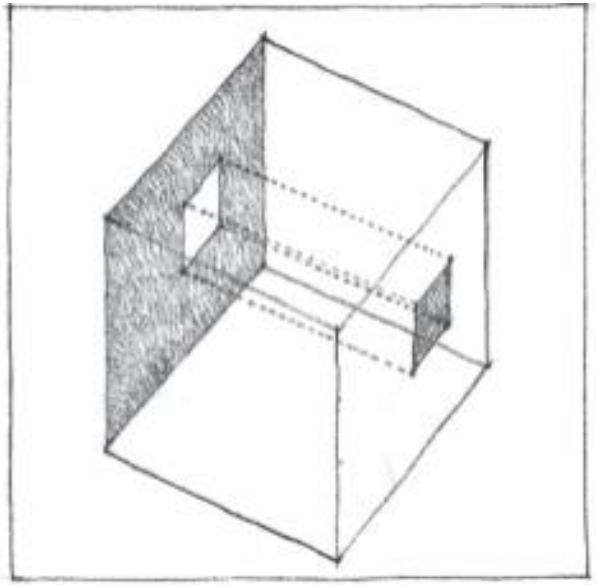
Primary Shapes

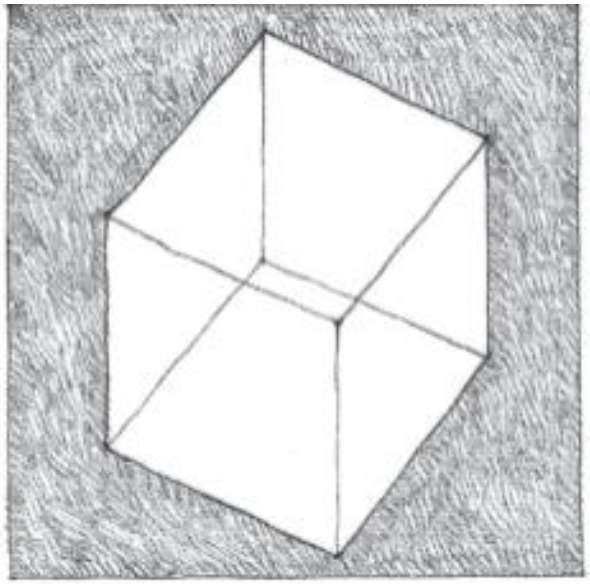
In architecture and interior design, we are concerned with the shapes of:

Floor, wall, and ceiling planes that enclose space.

Door and window openings within a spatial enclosure.

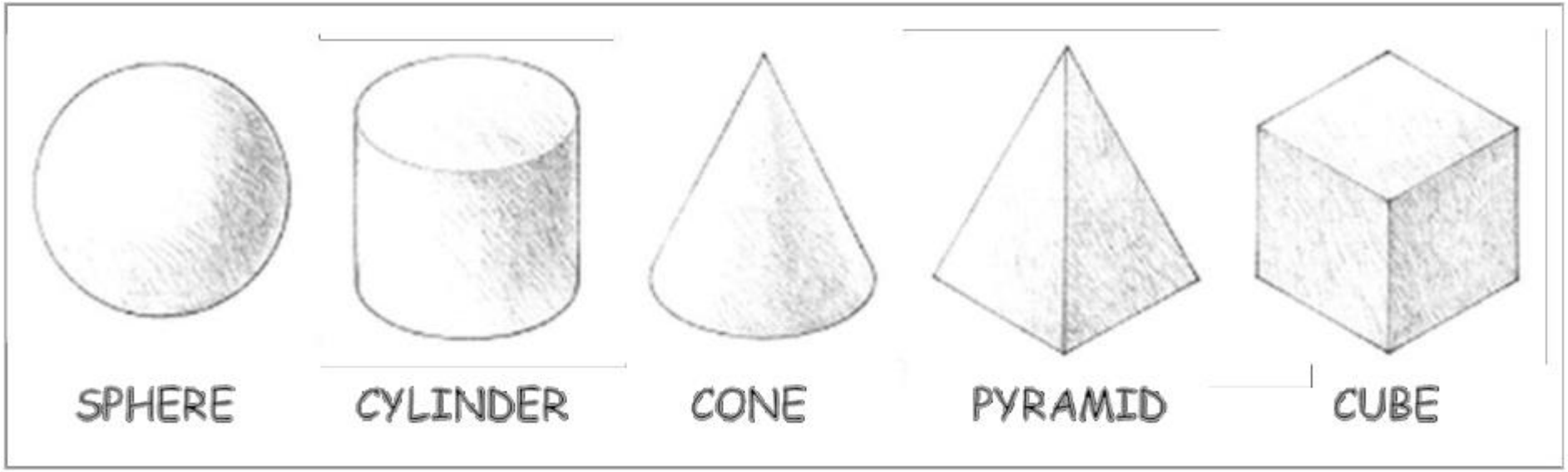






Primary Solids

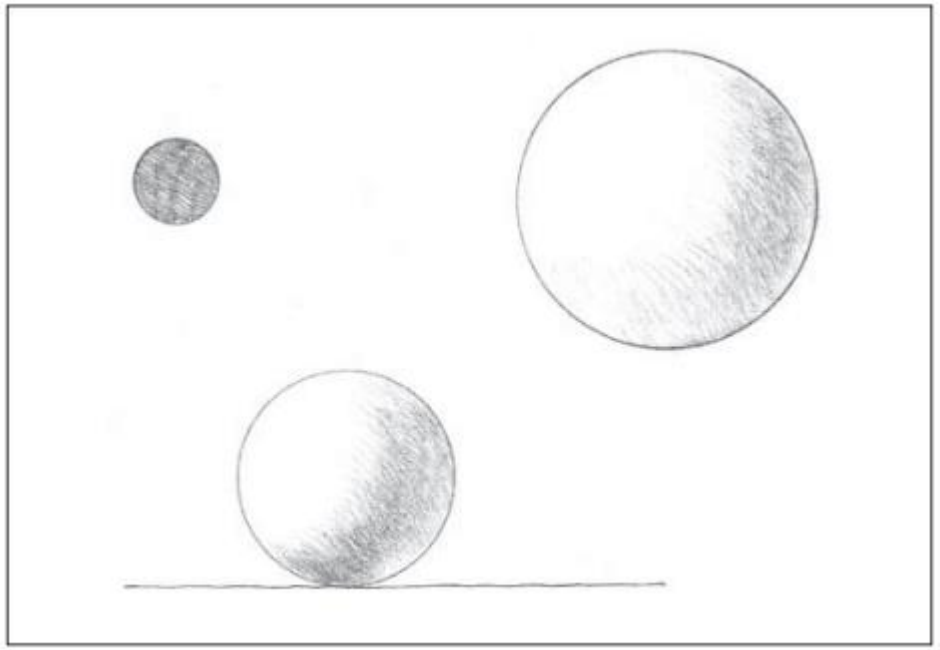
The primary shapes can be extended or rotated to generate volumetric forms or solids that are distinct, regular, and easily recognizable. Circles generate spheres and cylinders; triangles generate cones and pyramids; squares generate cubes. In this context, the term “solid” does not refer to firmness of substance but rather to a three-dimensional geometric body or figure.



Primary Solids

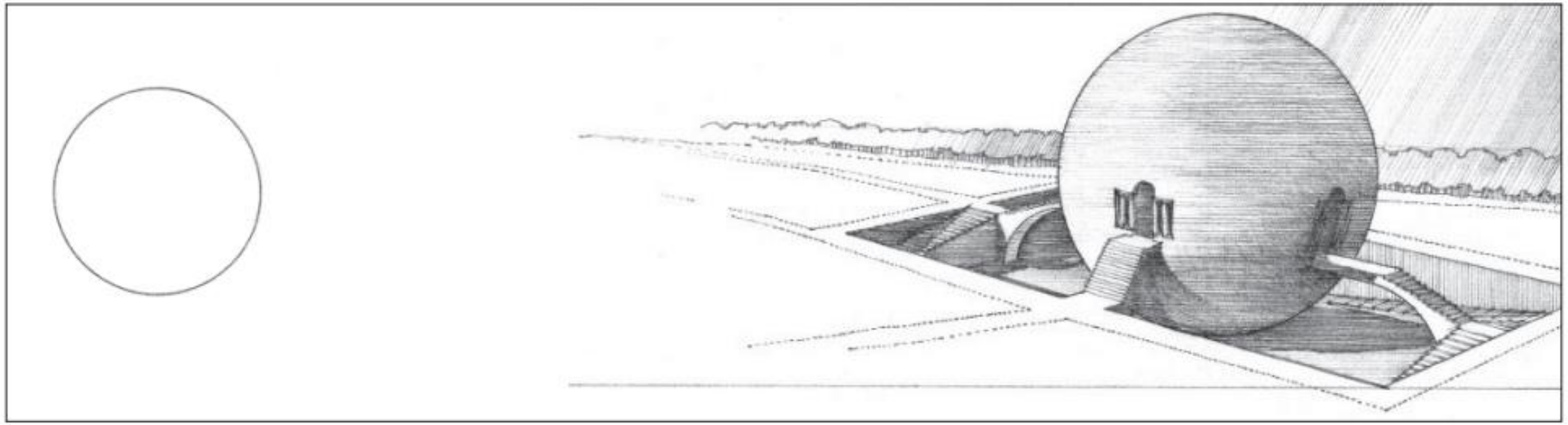
1-Sphere

A solid generated by the revolution of a semicircle about its diameter, whose surface is at all points equidistant from the center. A sphere is a centralized and highly concentrated form. Like the circle from which it is generated, it is self-centering and normally stable in its environment. It can be inclined toward a rotary motion when placed on a sloping plane. From any viewpoint, it retains its circular shape



Primary Solids

1-Sphere

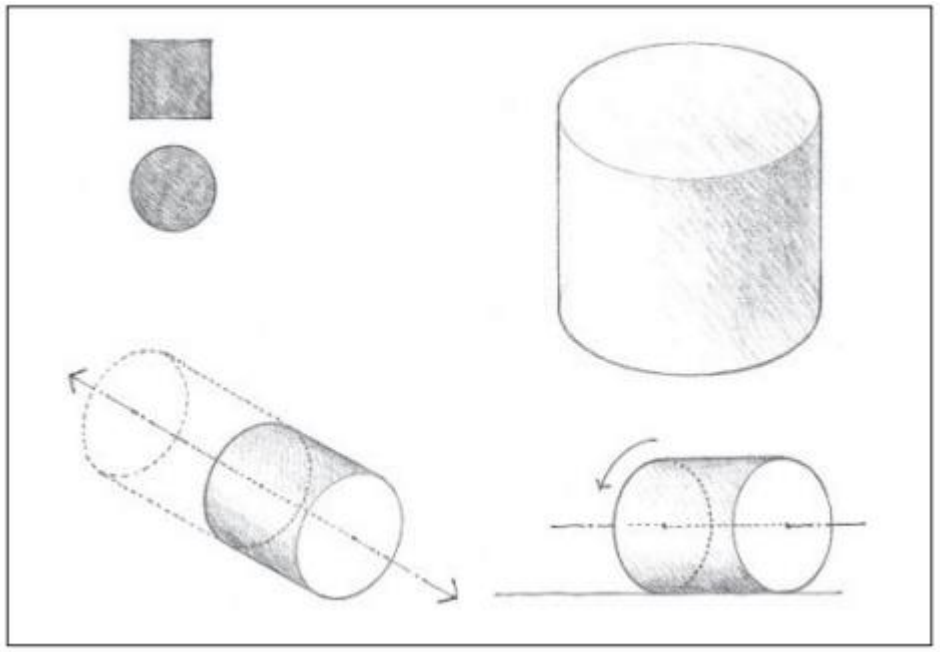


Maupertius, Project for an Agricultural Lodge, 1775, Claude-Nicolas Ledoux

Primary Solids

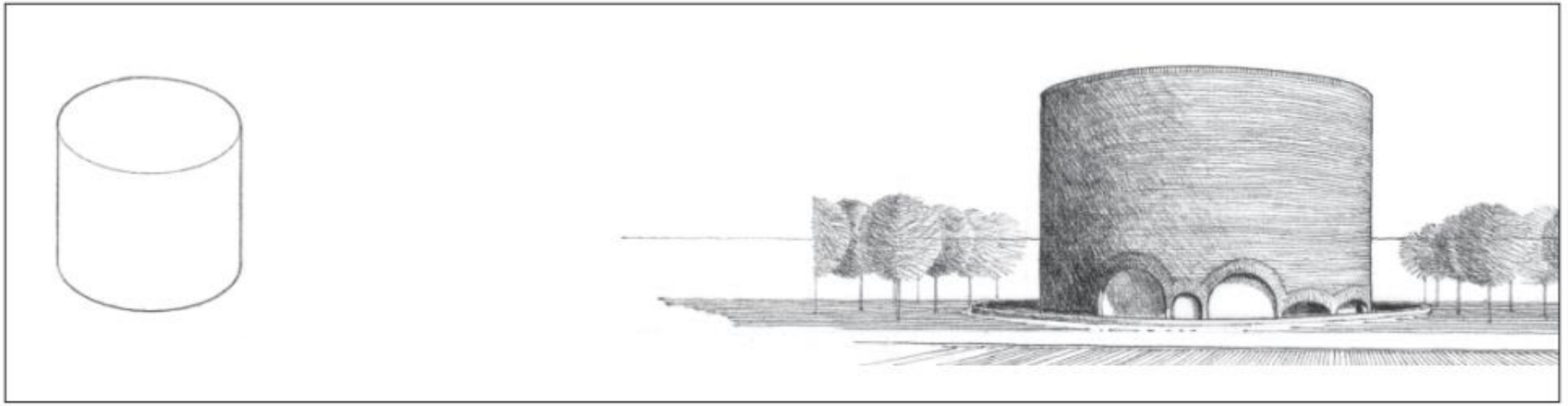
2- Cylinder

A solid generated by the revolution of a rectangle about one of its sides. A cylinder is centralized about the axis passing through the centers of its two circular faces. Along this axis, it can be easily extended. The cylinder is stable if it rests on one of its circular faces; it becomes unstable when its central axis is inclined from the vertical.



Primary Solids

2- Cylinder

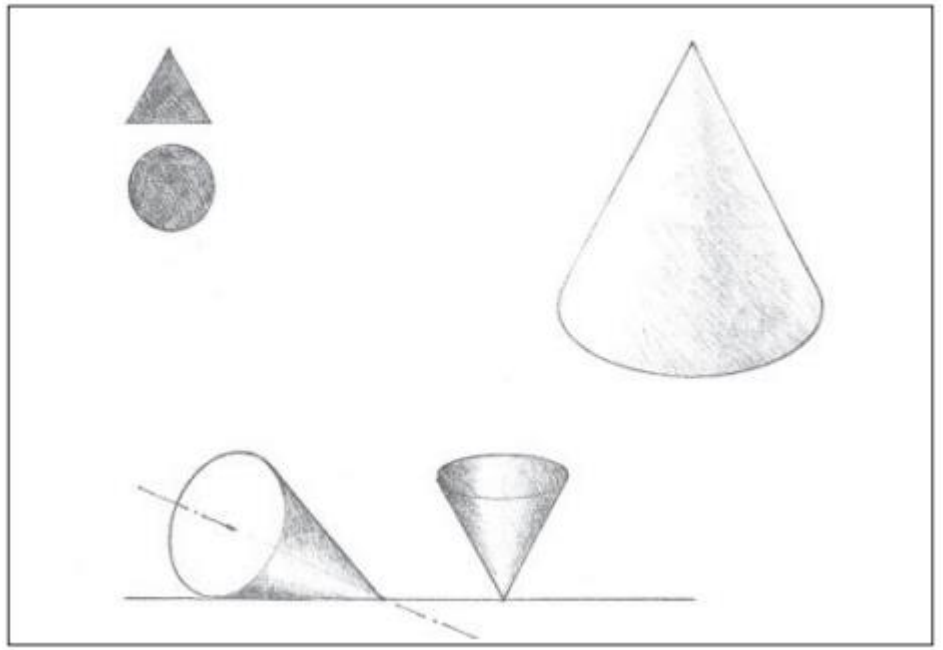


Chapel, Massachusetts Institute of Technology, *Cambridge, Massachusetts, 1955, Eero Saarinen and Associates*

Primary Solids

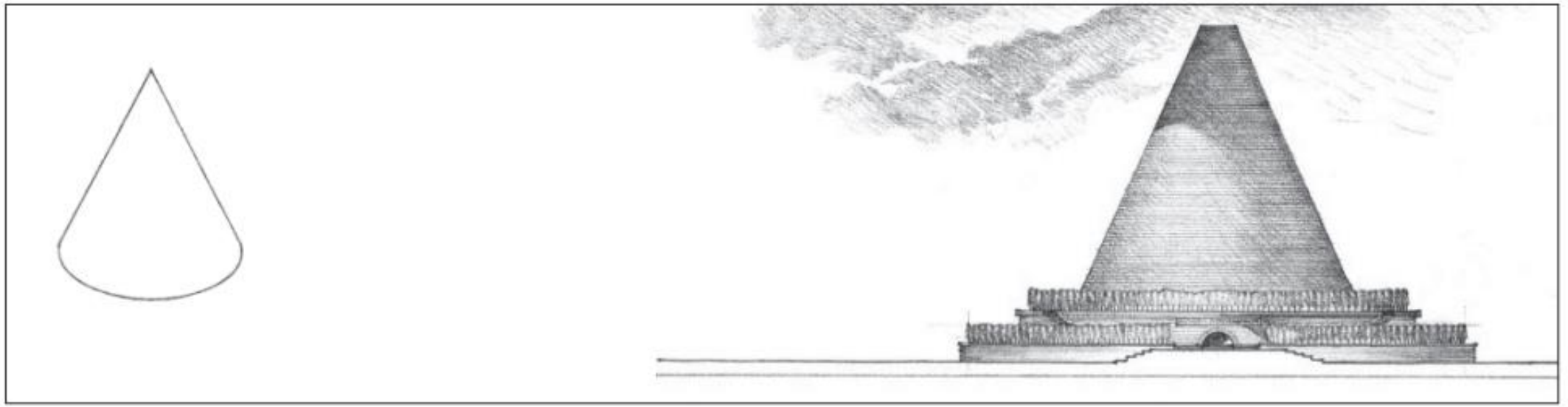
3- Cone

A solid generated by the revolution of a right triangle about one of its sides. Like the cylinder, the cone is a highly stable form when resting on its circular base, and unstable when its vertical axis is tipped or overturned. It can also rest on its apex in a precarious state of balance



Primary Solids

3- Cone

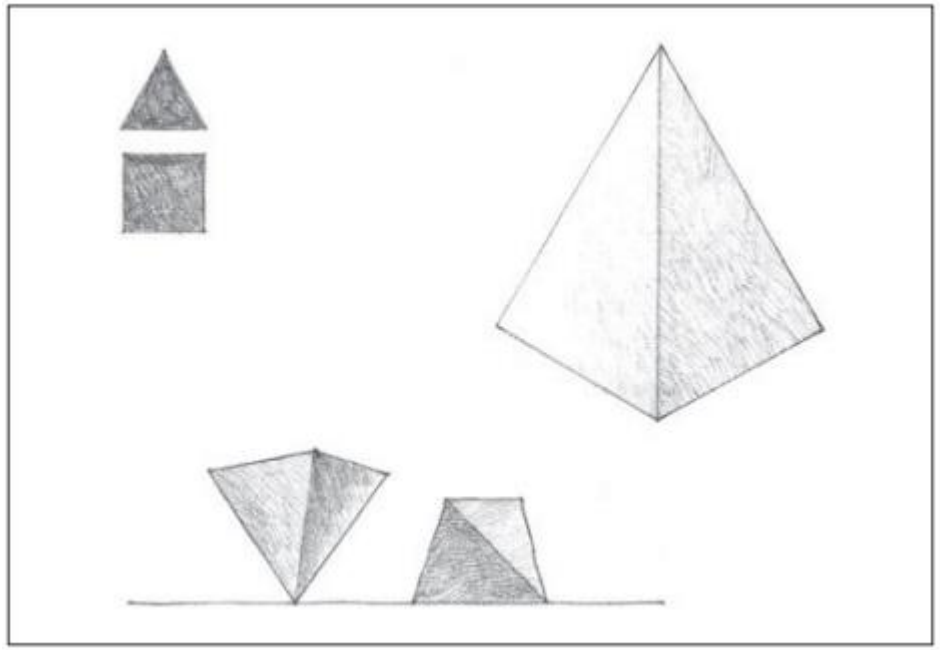


Project for a Conical Cenotaph, 1784, Étienne-Louis Boulée

Primary Solids

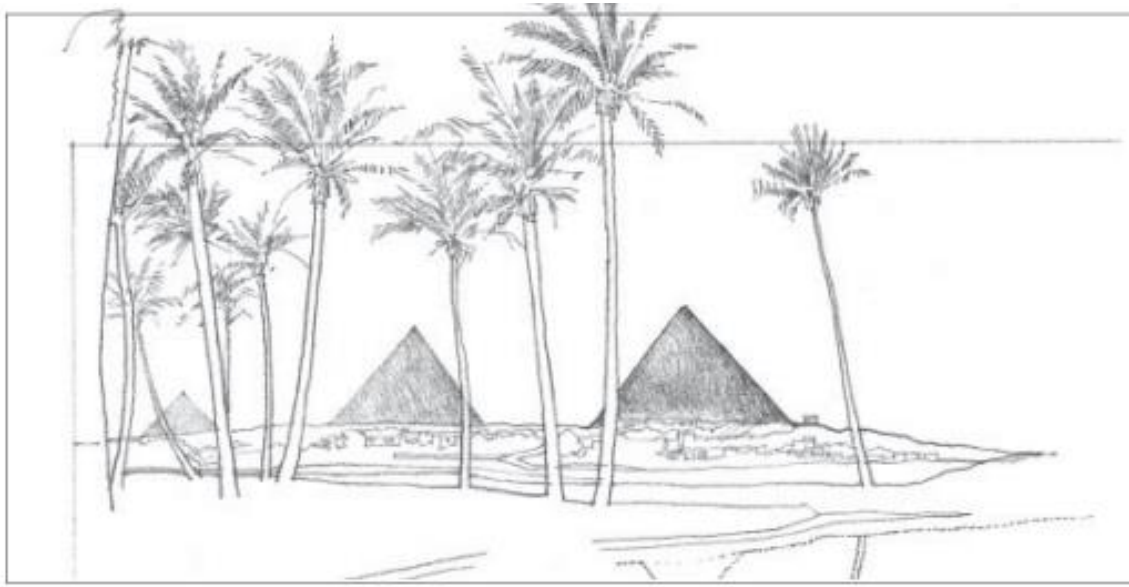
4- Pyramid

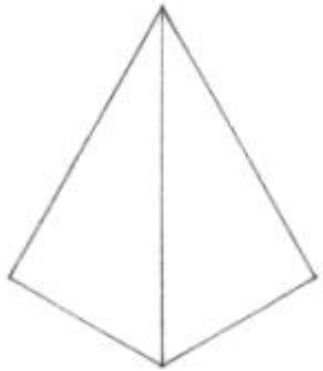
A polyhedron having a polygonal base and triangular faces meeting at a common point or vertex. The pyramid has properties similar to those of the cone. Because all of its surfaces are flat planes, however, the pyramid can rest in a stable manner on any of its faces. While the cone is a soft form, the pyramid is relatively hard and angular



Primary Solids

4- Pyramid



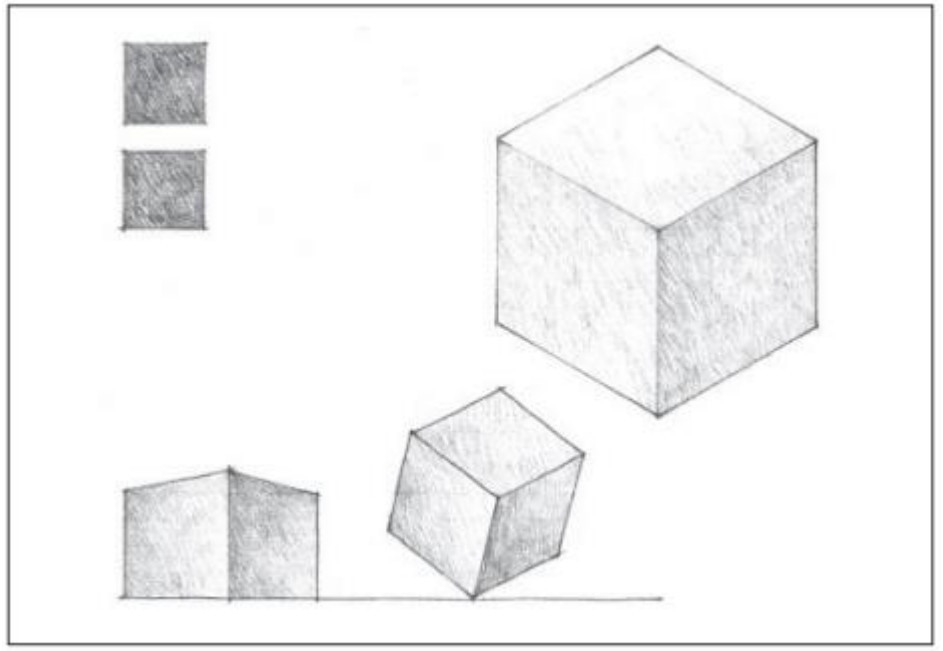


Pyramids of Cheops, Chephren, and Mykerinos at Giza, Egypt, c. 2500 B.C.

Primary Solids

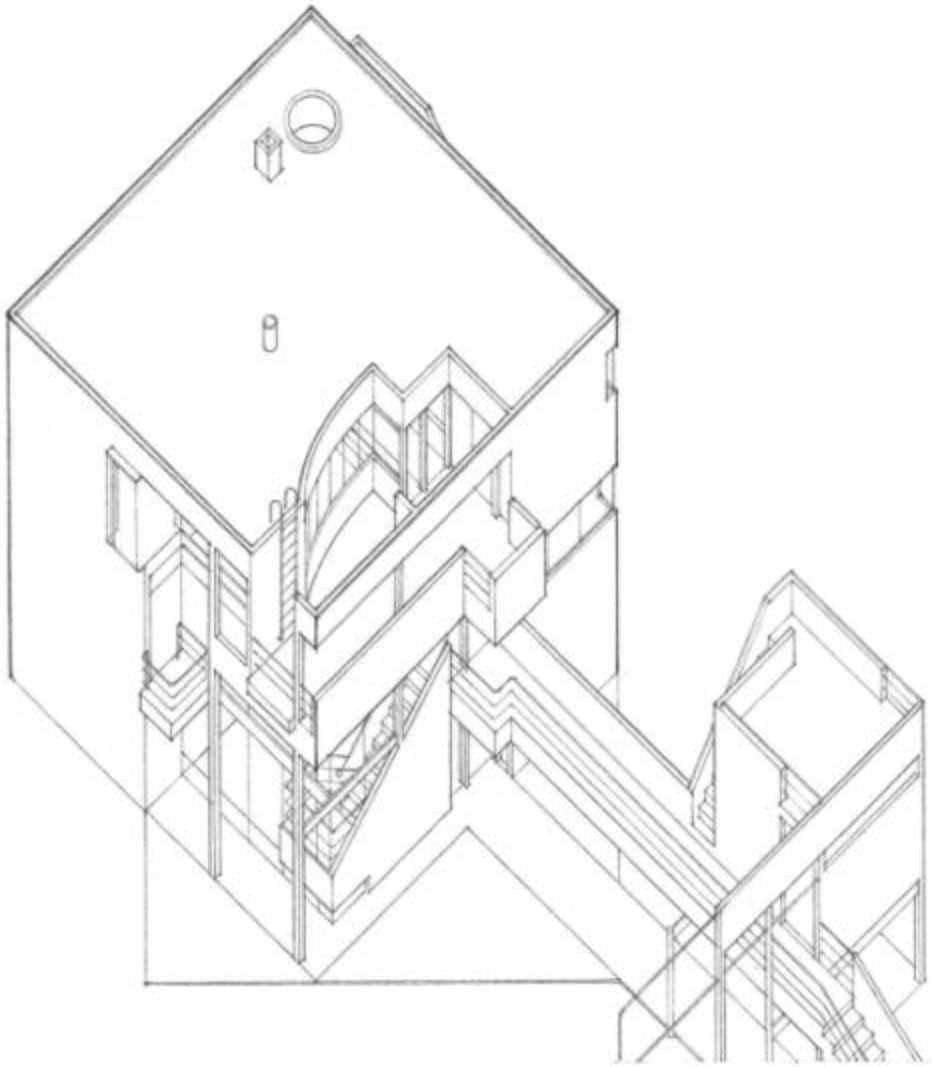
5-Cube

A prismatic solid bounded by six equal square sides, the angle between any two adjacent faces being a right angle. Because of the equality of its dimensions, the cube is a static form that lacks apparent movement or direction. It is a stable form except when it stands on one of its edges or corners. Even though its angular profile is affected by our point of view, the cube remains a highly recognizable form



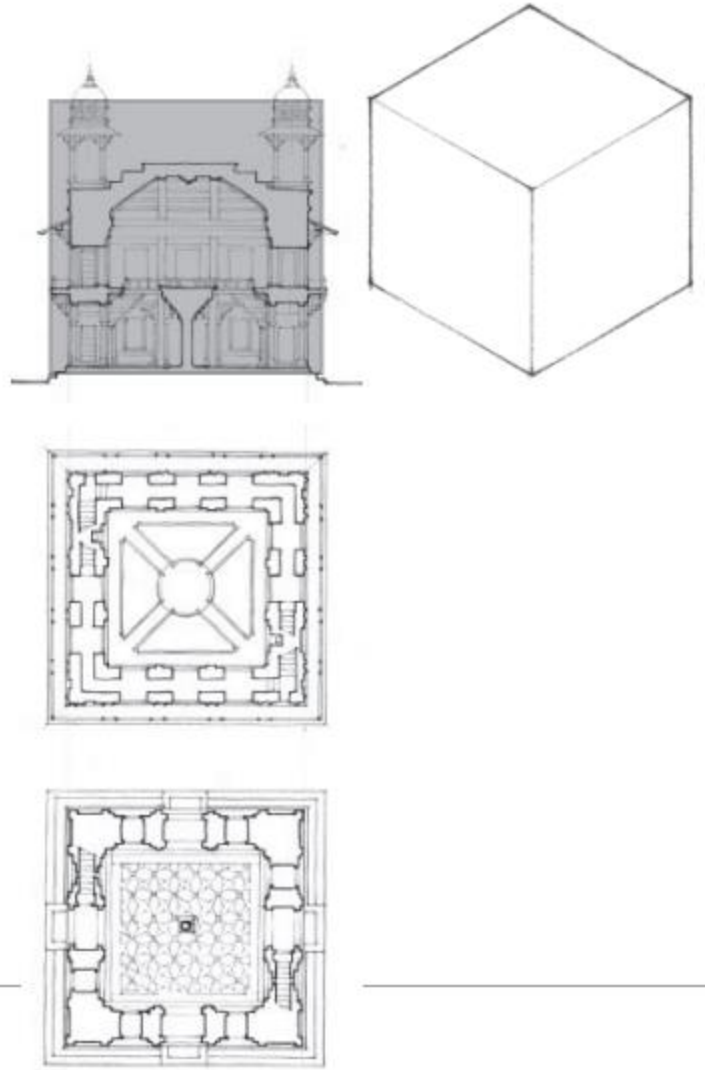
Primary Solids

5-Cube

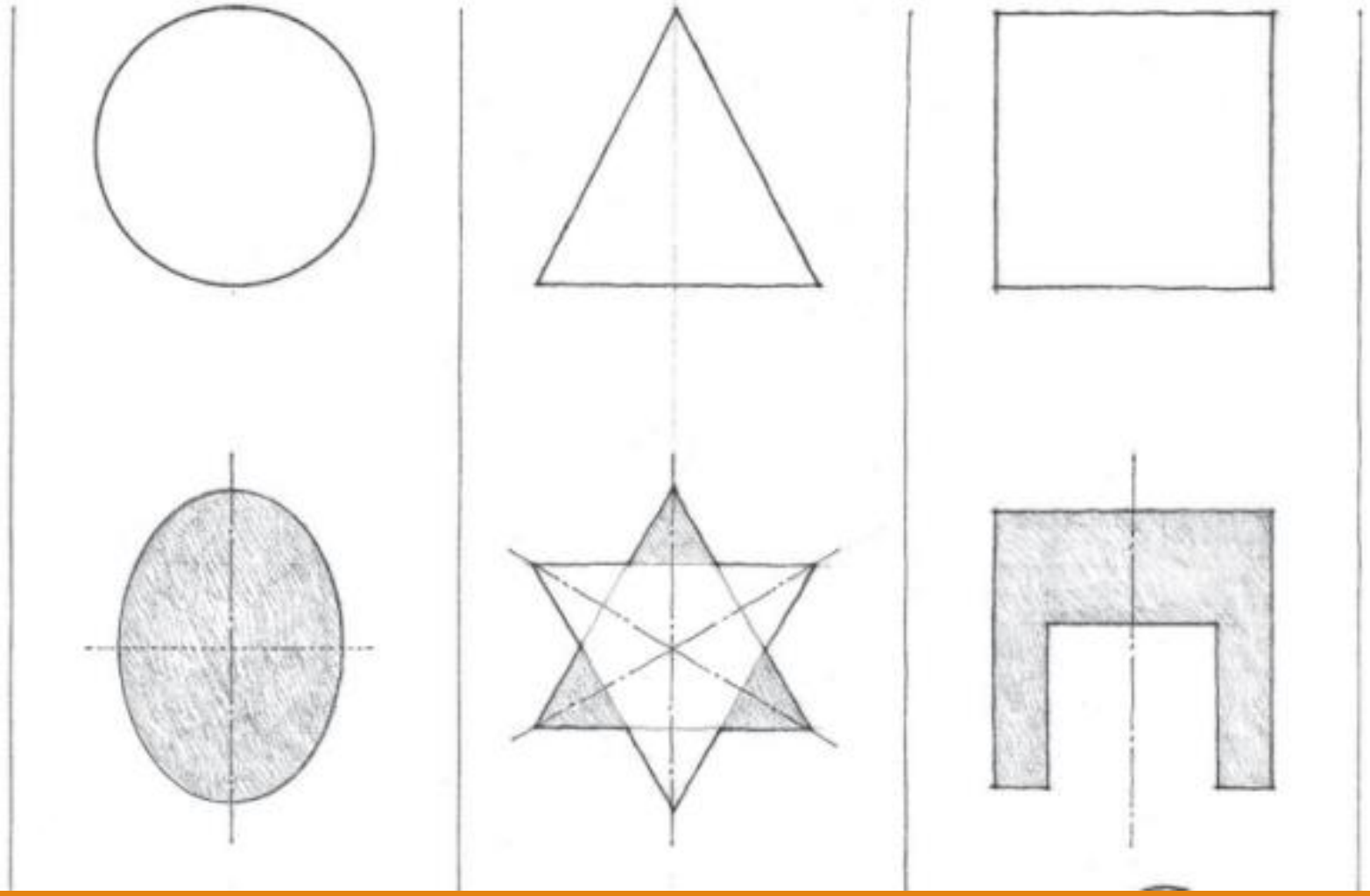


Hanselmann House, Fort Wayne, Indiana, 1967, Michael Graves

Diwan-i-Khas, Fatehpur Sikri,
Palace Complex of Akbar the Great
Mogul Emperor of India, 1569–1574



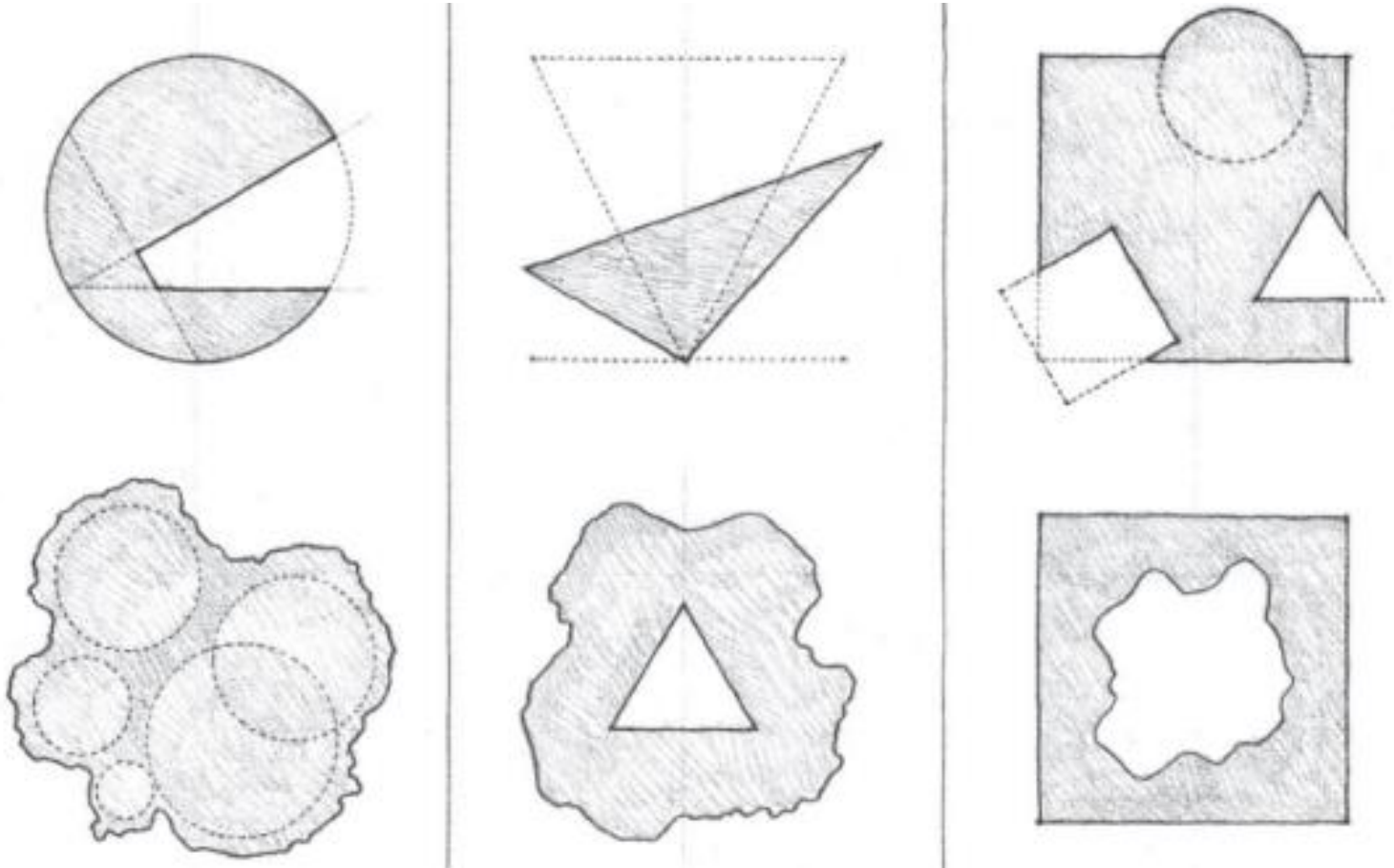
REGULAR & IRREGULAR FORMS



Regular forms refer to those whose parts are related to one another in a consistent and orderly manner. They are generally stable in nature and symmetrical about one or more axes. The sphere, cylinder, cone, cube, and pyramid are prime examples of regular forms.

Forms can retain their regularity even when transformed dimensionally or by the addition or subtraction of elements. From our experiences with similar forms, we can construct a mental model of the original whole even when a fragment is missing or another part is added.

REGULAR & IRREGULAR FORMS



Irregular forms are those whose parts are dissimilar in nature and related to one another in an inconsistent manner. They are generally asymmetrical and more dynamic than regular forms. They can be regular forms from which irregular elements have been subtracted or result from an irregular composition of regular forms.

Since we deal with both solid masses and spatial voids in architecture, regular forms can be contained within irregular forms. In a similar manner, irregular forms can be enclosed by regular forms.

THANK YOU