تدريب بصري

عناصر التشكيل المعماري

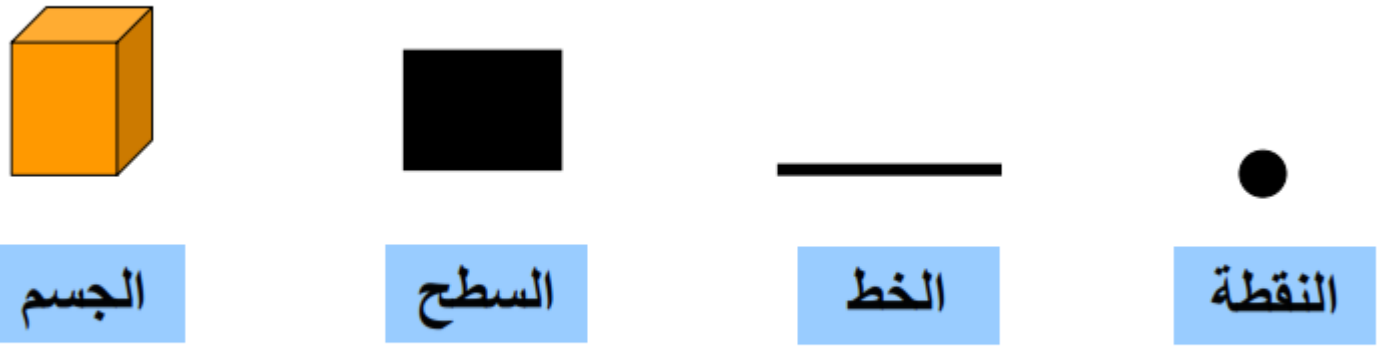
محاضرة (٢)

د/ رشا أحمد رياض ابراهيم
مدرس العمارة بقسم الهندسة المعمارية

العام الدراسي
٢٠١٧/٢٠١٨
الفصل الدراسي الأول

عناصر التشكيل المعماري

النقطة - الخط - المستوى (السطح) - الجسم



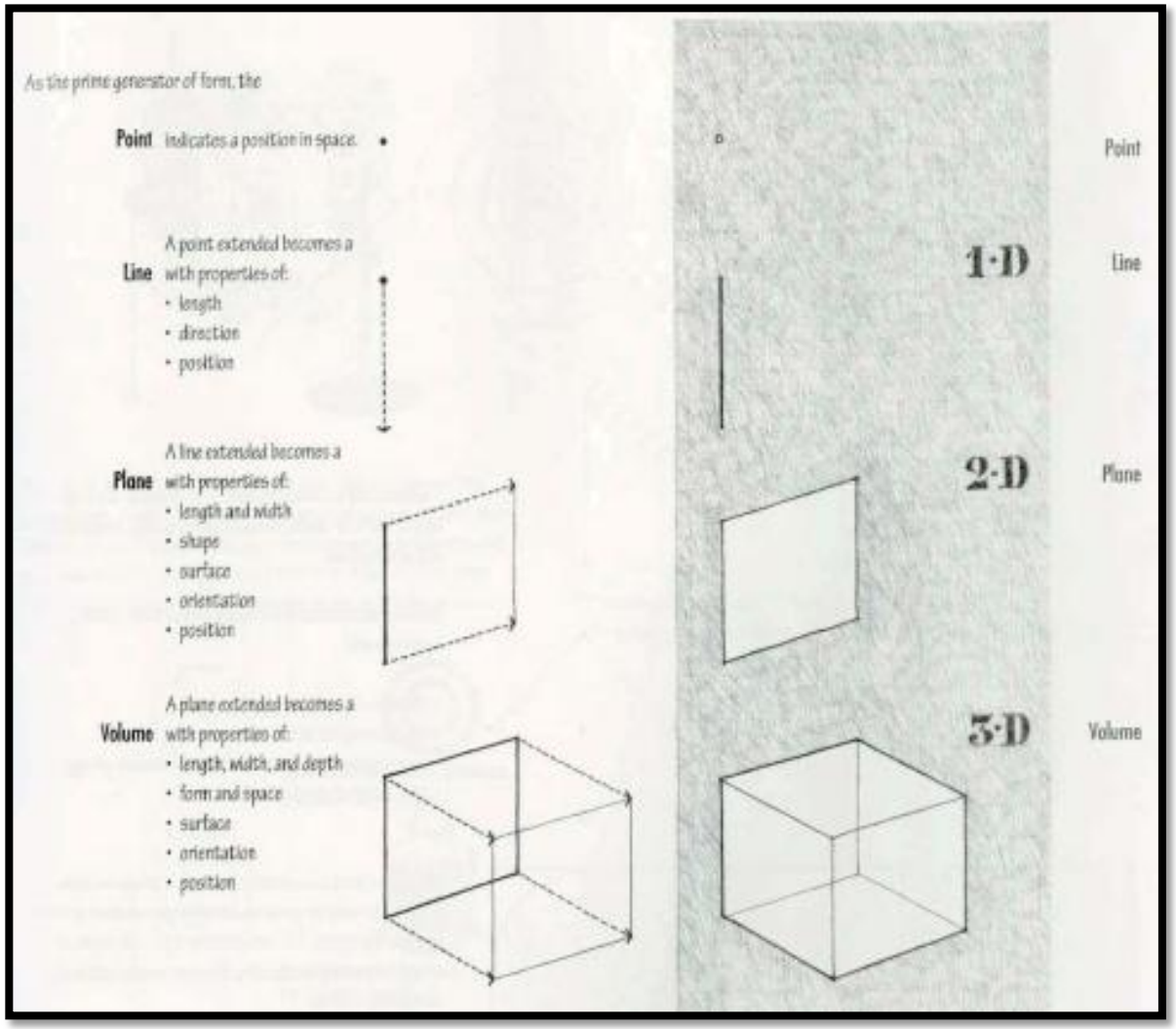
التحول من النقطة للجسم

نقطة

خط بعد واحد

مستوى بعدين

جسم ابعاد ثلاثة



اولا : النقطة

الخاصية الهندسية للنقطة

النقطة اصغر شئ بمكن تحديده في الفراغ او في الشكل – تقاطع خطين- نهايتين لخط ما – مركز الشكل

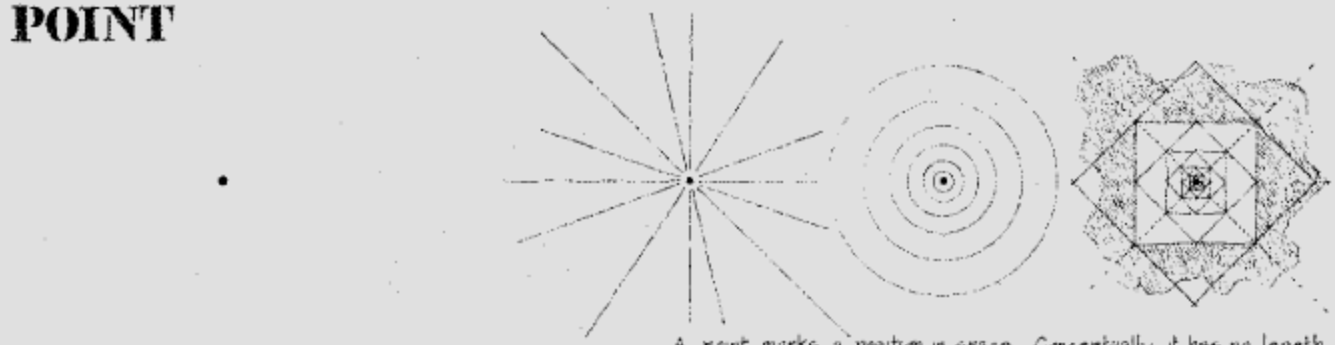
سمة النقطة :

تتميز النقطة بالوضوح وسهولة القراءة بسبب خاصية التركيز

المعنى الايحائي للنقطة

توحي بالوحدة والتفرد

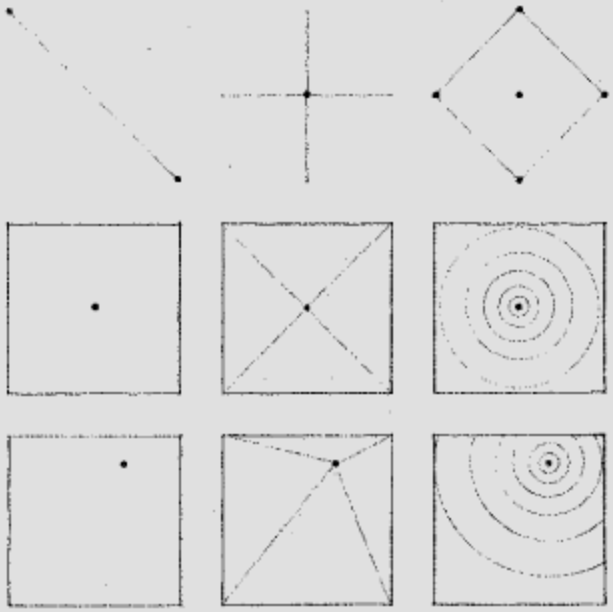
POINT



A point marks a position in space. Conceptually, it has no length, width, or depth, and is, therefore, static, directionless, and centralized.

As the prime element in the vocabulary of form, a point can serve to mark:

- the two ends of a line
- the intersection of two lines
- the meeting of lines at the corner of a plane or volume
- the center of a field.

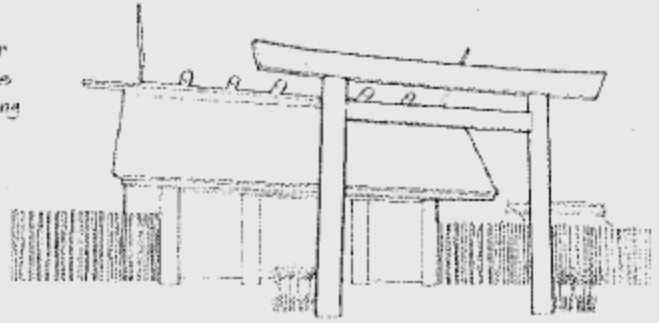


Although a point is conceptually without shape or form, it begins to make its presence felt when placed within a visual field. At the center of its environment, a point is stable and at rest, organizing surrounding elements about itself and dominating its field.

When the point is moved off-center, however, its field becomes more aggressive and begins to compete for visual supremacy. A visual tension is created between the point and its field.

2 POINTS

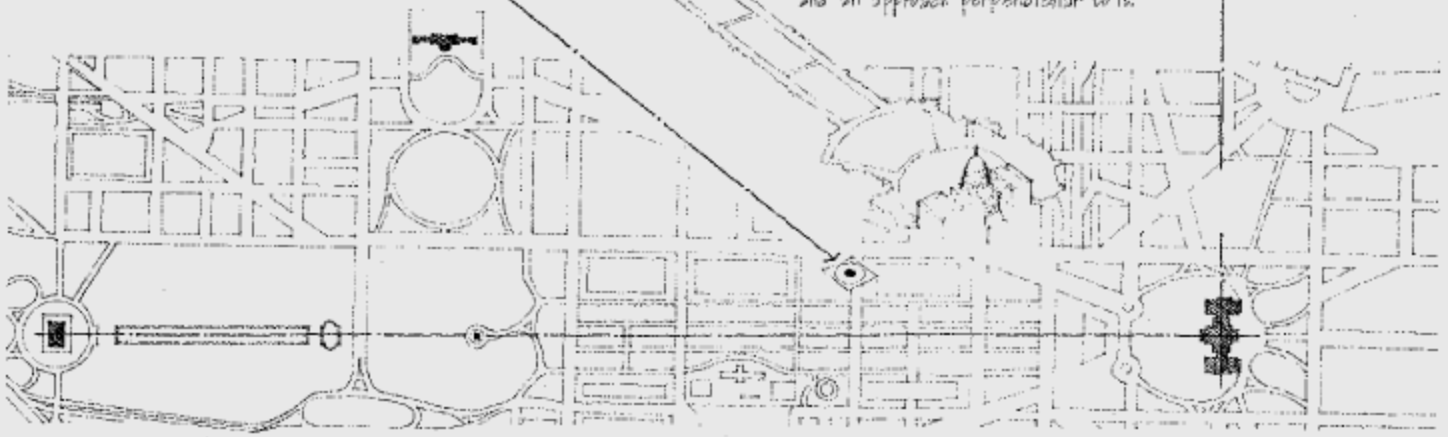
Two points established in space by columnar elements or centralized forms, can define an axis, an ordering device that has been used throughout history to organize building forms and spaces.



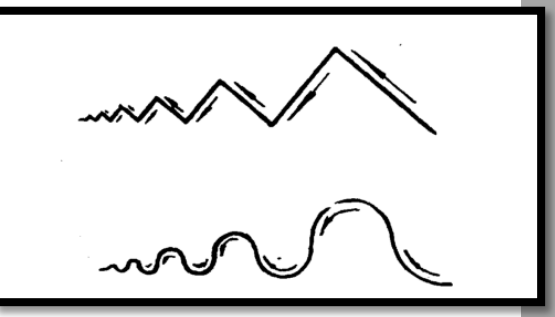
TORII : IKI SHRINE : JAPAN

THE MALL : WASHINGTON, D.C.

In plan, two points can be used to denote a gateway. These two points elevated define a plane of entry and an approach perpendicular to it.



ثانيا: الخط



الخاصية الهندسية للخط

الخط المستقيم : هو اصغر بعد بين نقطتين

الخط المنكسر : توالي مستقيمات متصلة طرفا بطرف في اتجاهات مختلفة

الخط المنحني : يتكون من حركة نقطة في الفراغ بشكل منحني

سمة الخط

الخط المستقيم : اكثر الخطوط وضوحا وتاكيدا

الخط المنكسر : اكثر مشقة في القراءة بسبب صعوبة تتبع تغييراته

الخط المنحني : الليونة مع الاستمرارية

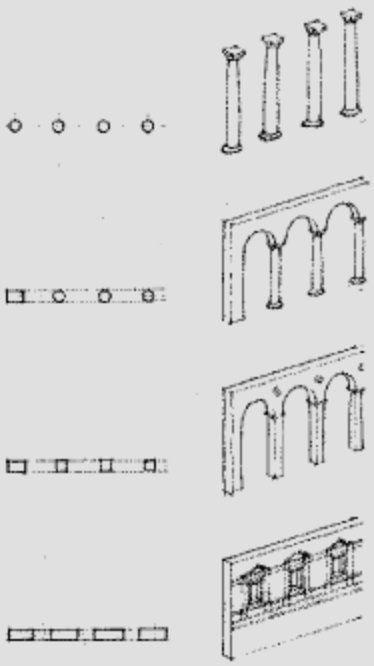
المعنى الايحائي للخط

الخط المستقيم : القوة والاستقامة

الخط المنكسر : الزاوية الحادة للخط توحي بالحدة والاتجاه

الخط المنحني : يوحي بالليونة والسلاسة

FROM LINE TO PLANE



Two parallel lines have the ability to visually describe a plane. A transparent spatial membrane can be stretched between them to acknowledge their visual relationship. The closer these lines are to each other, the stronger will be the sense of plane they convey.

A series of parallel lines, through their repetitiveness, will reinforce our perception of the plane they describe.

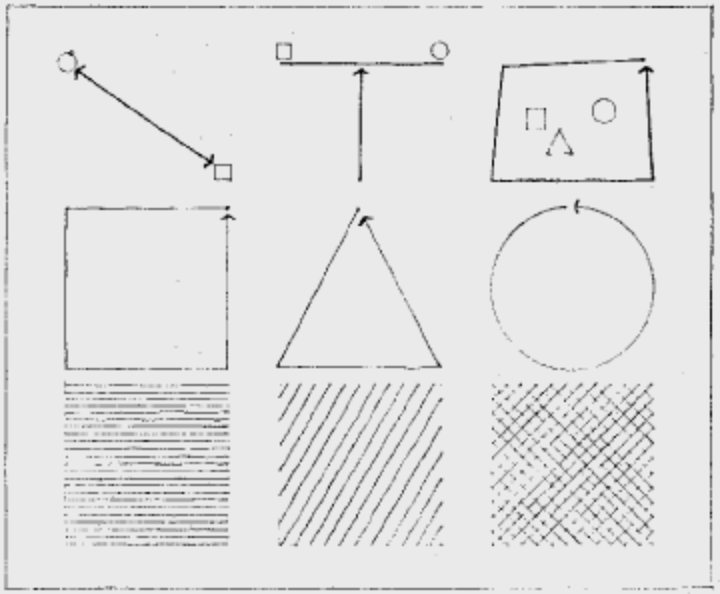
As these lines extend themselves along the plane they describe, the implied plane becomes real, and the original voids between the lines become merely interruptions of the planar surface.

The diagrams illustrate the transformation of a row of round columns (lines), initially supporting a portion of a wall (plane), then becoming square piers (part of the wall plane), and finally remnants of the original columns occurring as a relief along the surface of the wall.

"The column is a certain strengthened part of a wall, carried up perpendicularly from the foundation to the top... A row of columns is indeed nothing but a wall, open and discontinued in several places."

ALBERTI

LINE

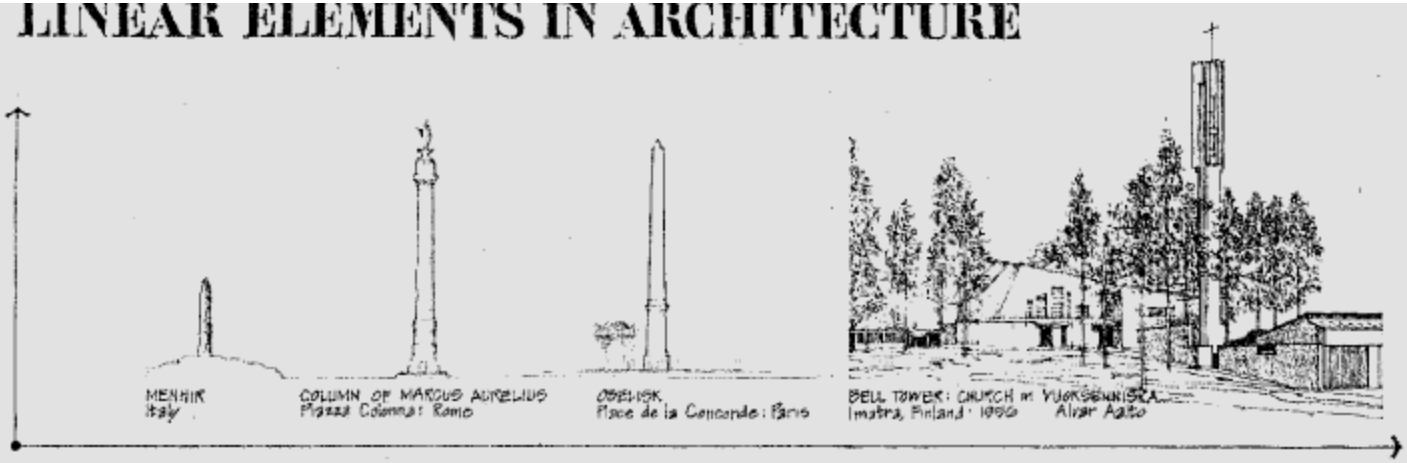


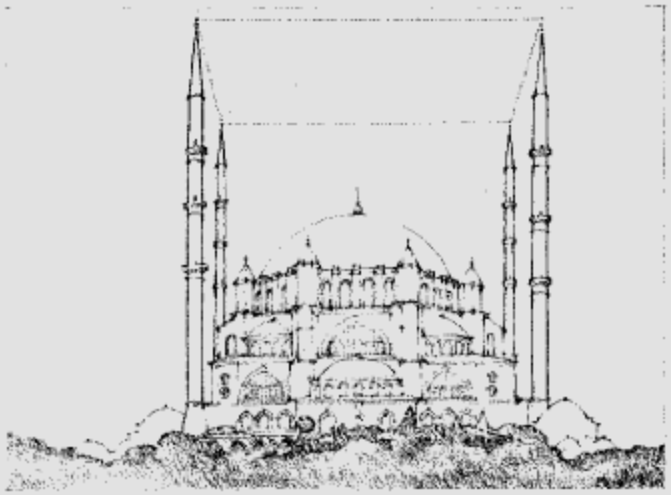
A point extended becomes a line. Conceptually, a line has length, but no width or depth. Whereas a point is by nature static, a line, in describing the path of a point in motion, is capable of visually expressing direction, movement, and growth.

A line is an important element in the formation of any visual construction. It can serve to:

- join, link, support, surround, or intersect other visual elements.
- describe the edges of, and give shape to, planes.
- articulate the surfaces of planes.

LINEAR ELEMENTS IN ARCHITECTURE



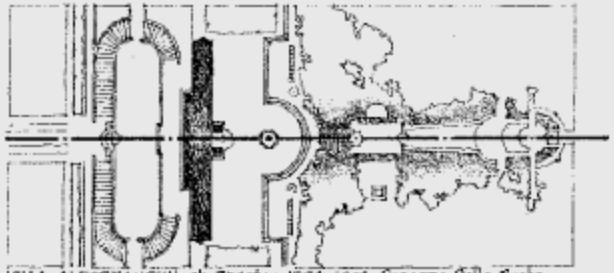


HAGIA SOPHIA: Constantinople (Istanbul) 532-7
Anthemius of Tralles & Isidorus of Miletus

Vertical linear elements, such as columns, obelisks, and towers, have been used throughout history to commemorate significant events and establish particular points in space.

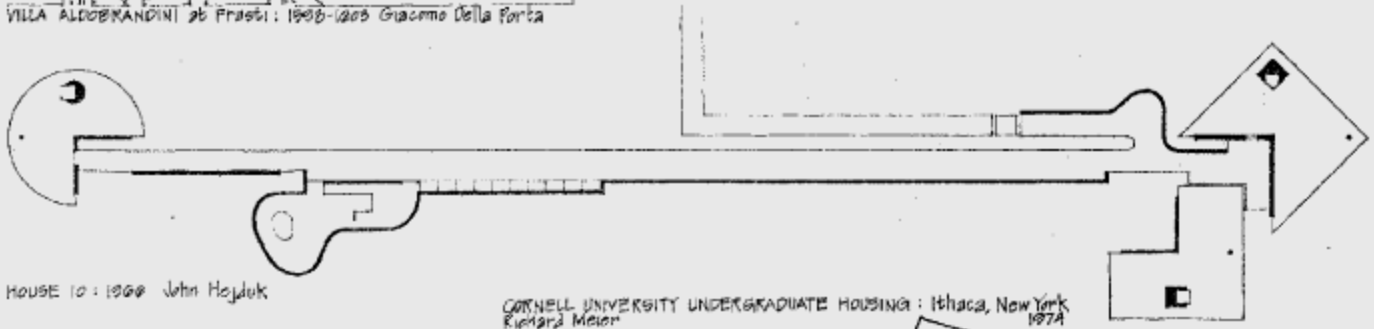
Vertical linear elements can also be used to define transparent volumes of space. In the example illustrated to the left, the four minaret towers define a spatial field from which the dome of Hagia Sophia rises in splendor.

LINEAR ELEMENTS



VILLA ALDOBRANDINI at Frasti : 1598-1603 Giacomo Della Porta

A line can be an imagined rather than a visible element in architecture. An example is the axis, a regulating line established by two points in space and about which elements can be symmetrically arranged.

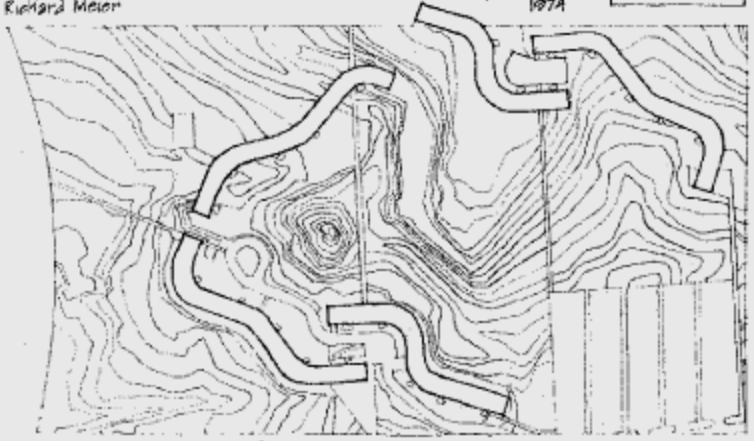


HOUSE IV : 1968 John Hejduk

Although architectural space exists in three dimensions, it can be linear in form to accommodate the path of movement through a building and link its spaces to one another.

Building forms also can be linear, particularly when they consist of repetitive spaces organized along a circulation path. As illustrated here, linear building forms have the ability to enclose exterior space as well as adapt to varying site conditions.

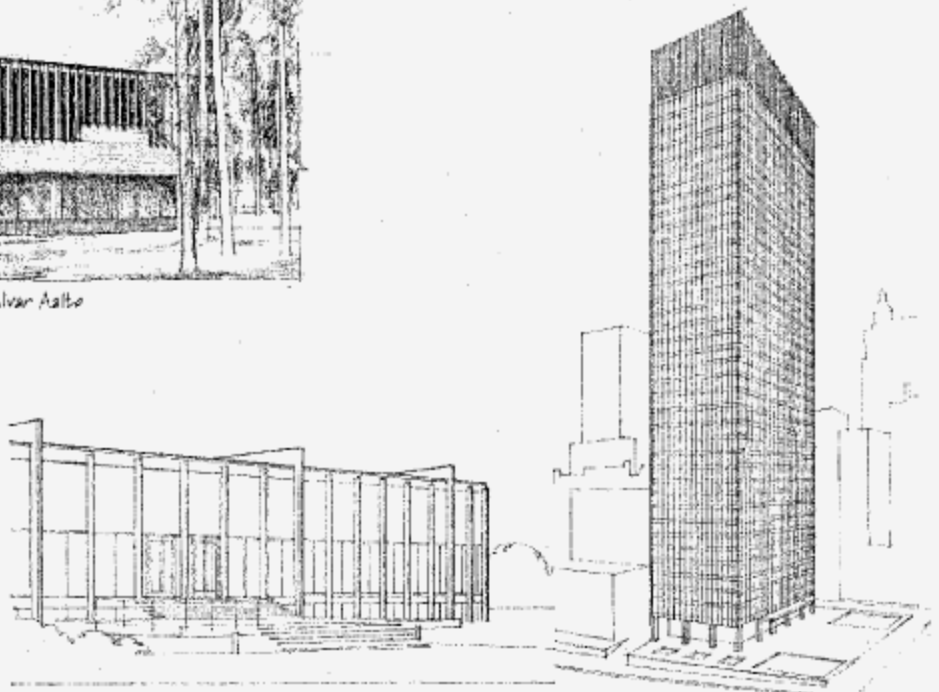
CORNELL UNIVERSITY UNDERGRADUATE HOUSING : Ithaca, New York
Richard Meier 1974



LINEAR ELEMENTS

TOWN HALL: Säynätsalo, Finland 1950-52 Alvar Aalto

At a smaller scale, lines articulate the edges and surfaces of planes and volumes. These lines can be joints in or between building materials, frames around window or door openings, or a structural grid of columns and beams. How these linear elements affect a surface's texture will depend on their visual weight, direction, and spacing.



SCHOOL OF ARCHITECTURE AND DESIGN - CROWN HALL
Illinois Institute of Technology: Chicago, Illinois 1952
Mies van der Rohe

SEAGRAM BUILDING: New York 1958
Mies van der Rohe and
Philip Johnson

ثالثا: السطح

الخاصية الهندسية للسطح

سطح مستوى : يتكون من خط مستقيم موازي لنفسه

سطح منكسر : يتكون من حركة خط منكسر او تلاصق اسطح مستوية بزوايا

سطح منحني : يتكون من حركة خط منحني في الفراغ.

سمة السطح

الشكل المنتظم : التماثل المطلق وسمة الاشعاع

الشكل شبه المنتظم : سمة الاستطالة وتتأكد كلما زادت نسبة الطول عن العرض

الشكل غير المنتظم : ان لم تتم تجزئته الى اشكال منتظمة او شبه منتظمه فانه يوحي بالفوضى

المعنى الايحائي للسطح

السطح الأفقي: يوحي بالسكون

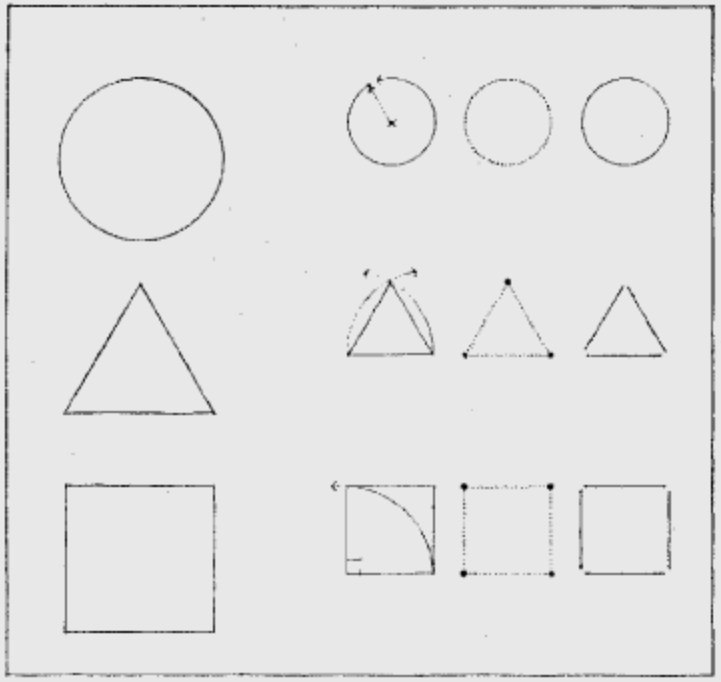
السطح الرأسي : يوحي بالاتجاه والاندفاع لاعلى

السطح المنحنى : يوحي بالحركة الصاعدة او الهابطة طبقا لرؤية المكان

PRIMARY SHAPES

Given any composition of forms, we will tend to reduce the subject matter in our field of vision to the simplest and most regular shapes. The simpler and more regular a shape is, the easier it is to perceive and understand.

From geometry we know the regular shapes to be the circle, and the infinite series of regular (ie. having equal sides meeting at equal angles) polygons that can be inscribed within it. Of these, the most significant are the primary shapes: the circle, the triangle, and the square.



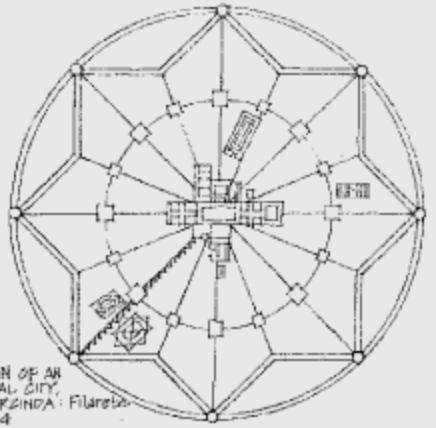
THE CIRCLE : a series of points arranged equally and balanced about a point.

THE TRIANGLE : a plane figure bounded by three sides, and having three angles.

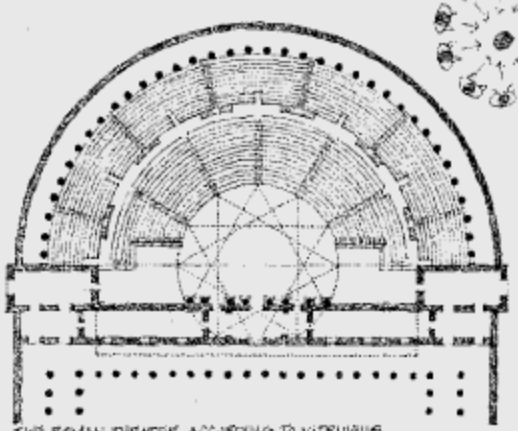
THE SQUARE : a plane figure having four equal sides and four right angles.

THE CIRCLE

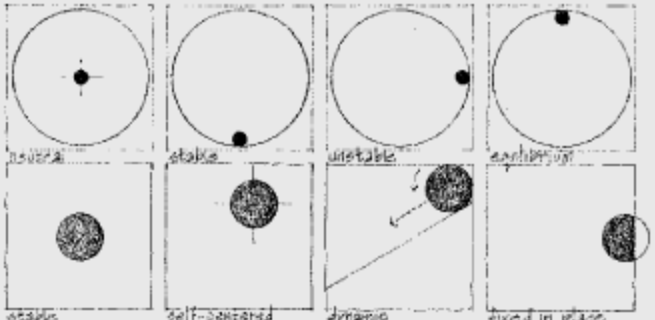
The circle is a centralized, introverted figure that is normally stable and self-centering in its environment. Placing a circle in the center of a field will reinforce its natural centrality. Associating it with straight or angular forms, or placing an element along its circumference, can make it an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

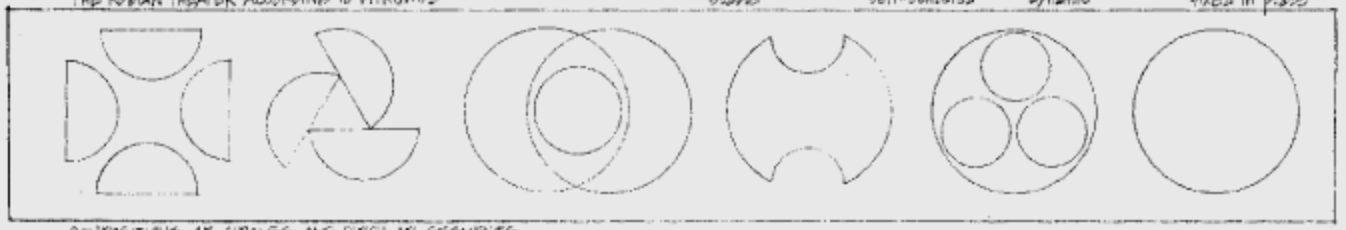


PLAN OF AN IDEAL CITY, SFORZINDA: Filarete, 1464



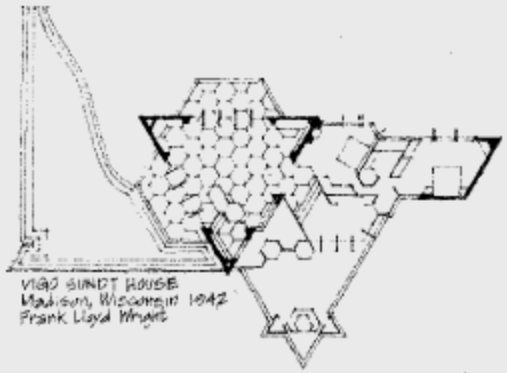
THE ROMAN THEATER ACCORDING TO VITRUVIUS





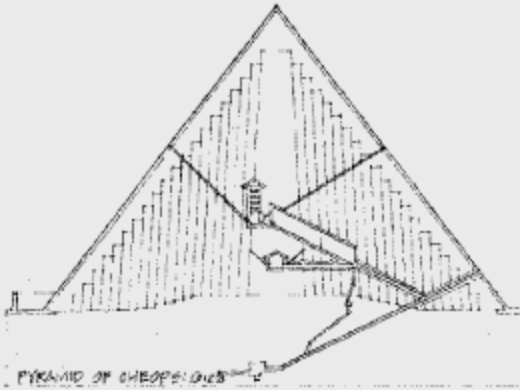
COMPOSITIONS OF CIRCLES AND CIRCULAR SEGMENTS

THE TRIANGLE

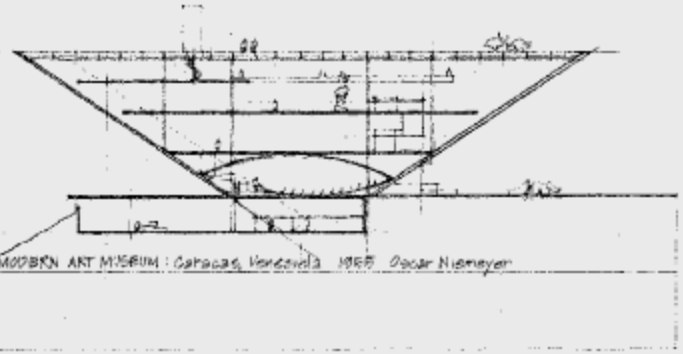


VIGO SUNDT HOUSE
Madison, Wisconsin 1942
Frank Lloyd Wright

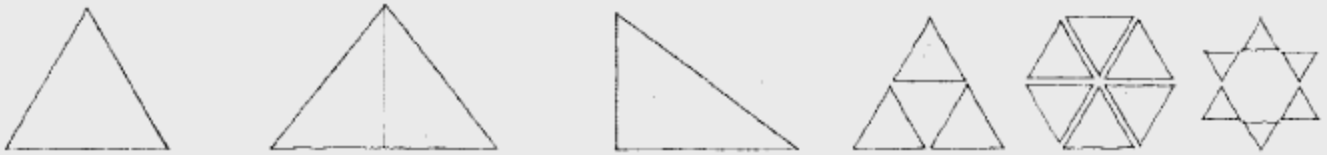
The triangle signifies stability. When resting on one of its sides, the triangle is an extremely stable figure. When tipped to stand on one of its vertices, however, it can either be balanced in a precarious state of equilibrium or be unstable and tend to fall over onto one of its sides.



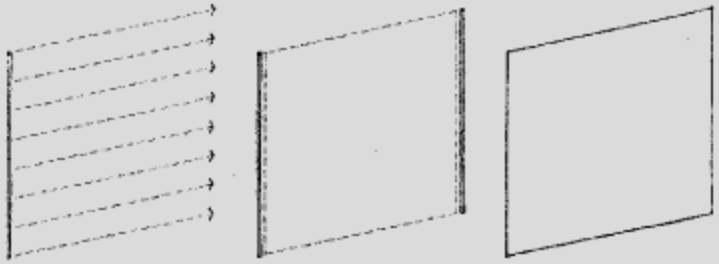
PYRAMID OF CHEOPS: GIZA



MODERN ART MUSEUM : Caracas, Venezuela 1955 Oscar Niemeyer



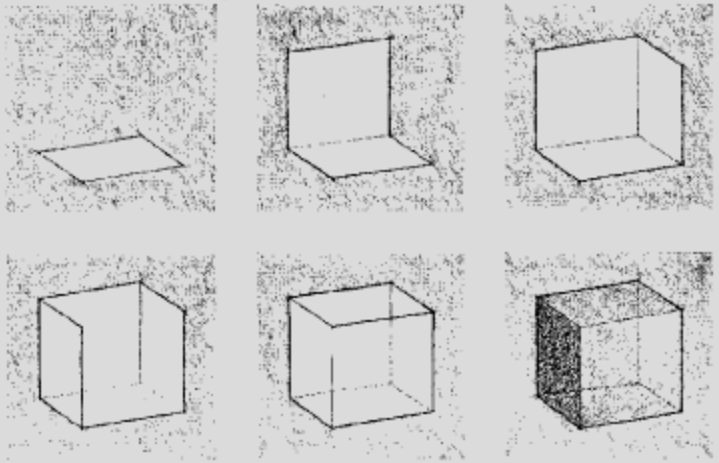
PLANE



A line extended (in a direction other than its intrinsic direction) becomes a plane. Conceptually, a plane has length and width, but no depth.

Shape is a plane's primary identifying characteristic. It is determined by the contour of the line forming the edges of the plane. Since our perception of a plane's shape is distorted by perspective, we see the true shape of a plane only when we view it frontally.

The surface properties of a plane, its color and texture, will affect its visual weight and stability.



In the formation of a visual construction, a plane serves to define the limits or boundaries of a volume. Since architecture, as a visual art, deals specifically with the formation of three-dimensional volumes of form and space, the plane becomes a key element in the vocabulary of architectural design.

PLANE

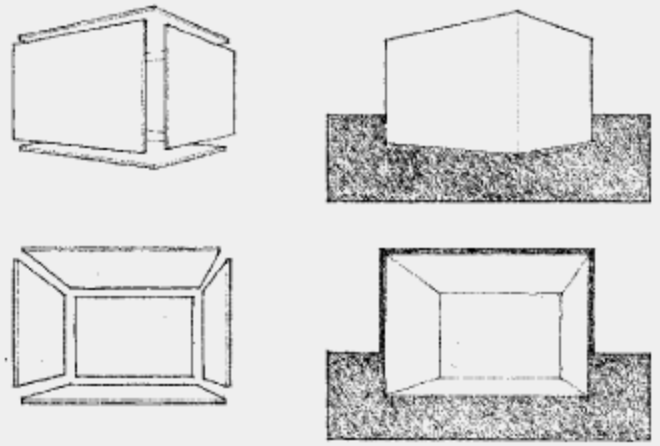
Planes in architecture define three-dimensional volumes of form and space. The properties of each plane (size, shape, color, texture) as well as their spatial relationship to one another will ultimately determine the visual properties of the form they define and the qualities of the space they enclose.

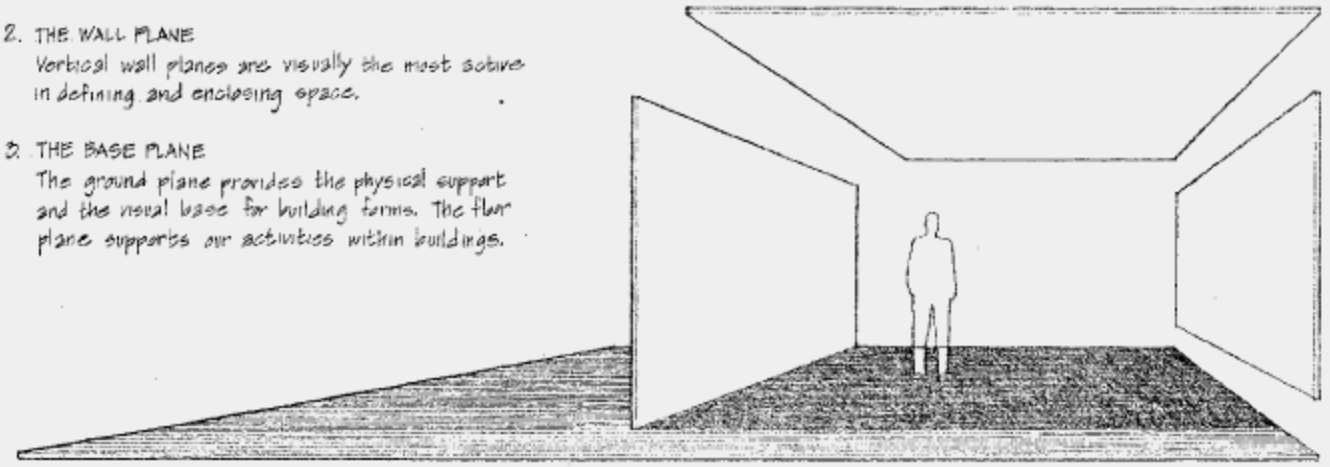
The generic types of planes that are manipulated in architectural design are:

1. THE OVERHEAD PLANE
   The overhead plane can be either the roof plane, a building's primary protection against the climatic elements, or the ceiling plane, the sheltering element in architectural space.

2. THE WALL PLANE
   Vertical wall planes are visually the most active in defining and enclosing space.

3. THE BASE PLANE
   The ground plane provides the physical support and the visual base for building forms. The floor plane supports our activities within buildings.





رابعا : الجسم

الخاصية الهندسية للجسم :

الجسم المنتظم : تشمل الكره والمكعب والهرم الثلاثي المنتظم تمر برؤسها دائرة

الجسم شبه المنتظم :الأجسام المنشورية والهرم والاسطوانة والمخروط

الجسم غير المنتظم : لا يخضع تكوينها لاي قاعدة

سمة الجسم

الجسم المنتظم : التماثل المطلق وسمة الاشعاع

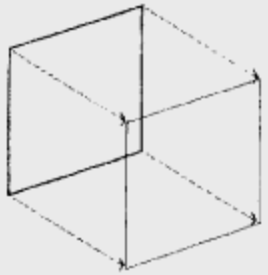
الجسم شبه المنتظم : سمة الاستطالة

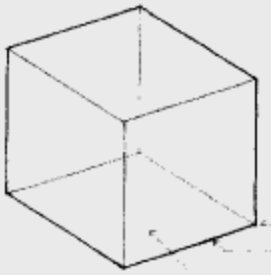
الجسم غير المنتظم : ليست لها سمة واضحة

المعنى الايحائي للجسم

الكره توحي بالدحرجه تبدو الاجسام ذات الاوجه المستويه اكثر ثقلا وتحديدا من الاجسام المستديرة المقطع ففي حين يوحي الهرم بالثبات ويوحي بالصعود والانطلاق عندما يزيد ارتفاعه فان الشكل المخروطي والمنشوري يوحيان بالصعود والاندفاع

VOLUME

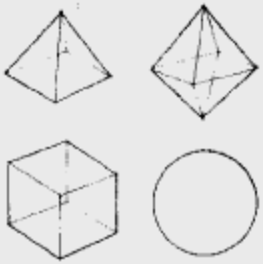




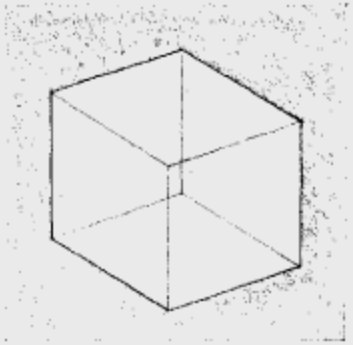
A plane extended (in a direction other than its intrinsic direction) becomes a volume. Conceptually, a volume has three dimensions: length, width, and depth.

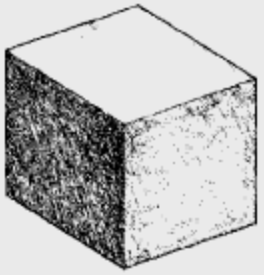
All volumes can be analyzed and understood to consist of:

- points (vertices), where several planes come together;
- lines (edges), where two planes meet; and
- planes (surfaces), the limits or boundaries of a volume.



Form is the primary identifying characteristic of a volume. It is determined by the shapes and interrelationships of the planes that describe the boundaries of the volume.





As the three-dimensional element in the vocabulary of architectural design, a volume can be either solid, space displaced by mass, or void, space contained or enclosed by planes.

THANKS