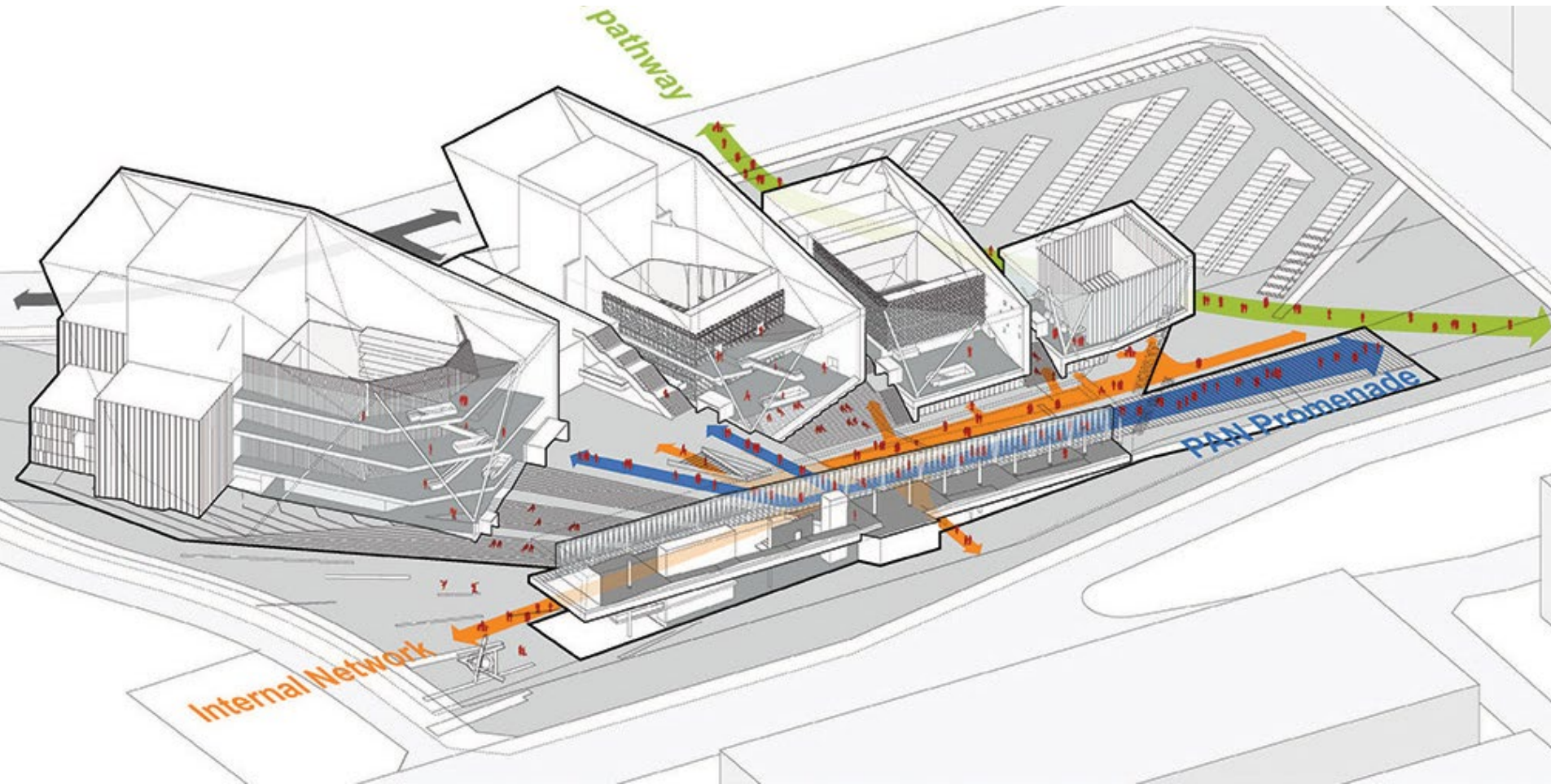


Design Studio- Level 4

Dr.Hossam Sabry



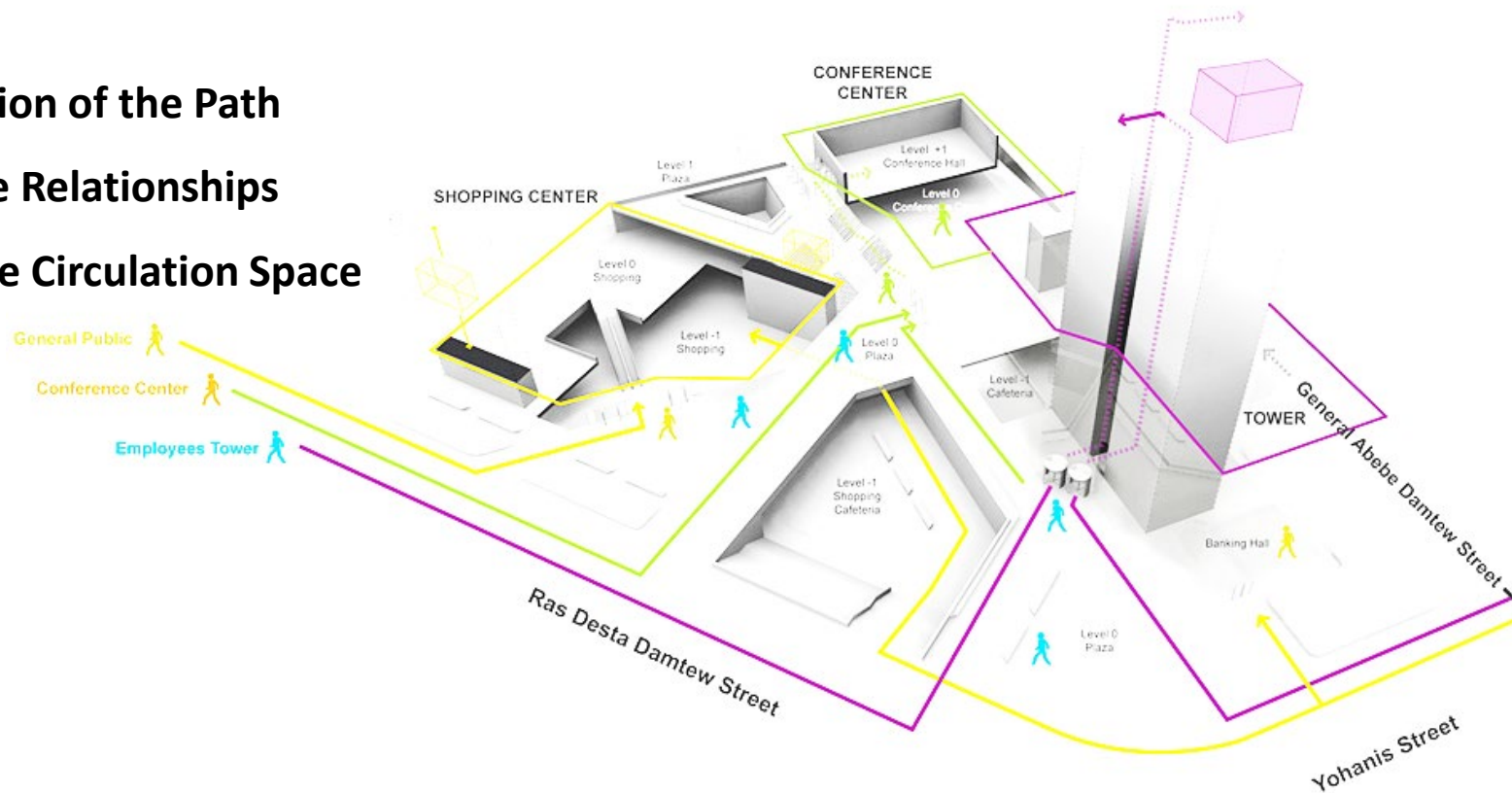
CIRCULATION

Circulation

Our bodies and our movement
are in constant dialogue with our
buildings.

*Charles Moore and Robert Yudell
Body, Memory, and Architecture 1977*

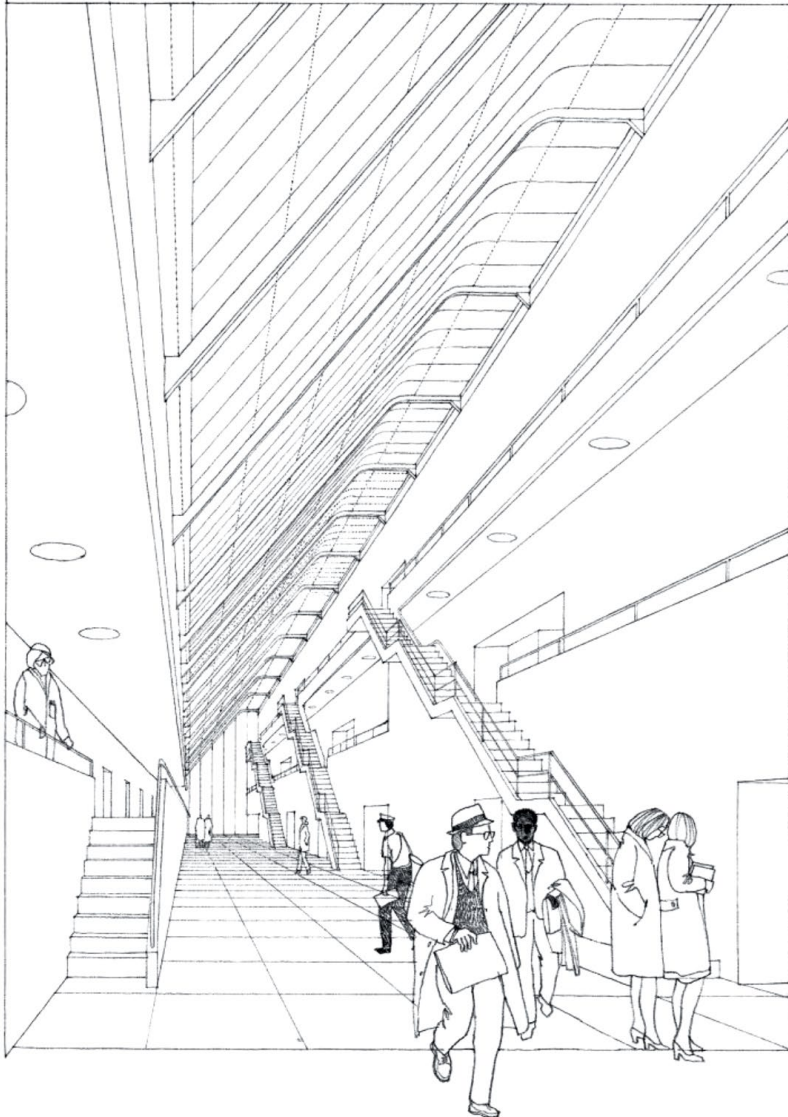
- **Circulation: Movement through Space**
- **Circulation Elements**
- **Approach**
- **Entrance**
- **Configuration of the Path**
- **Path-Space Relationships**
- **Form of the Circulation Space**



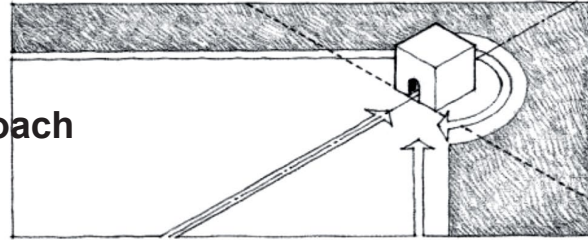
CIRCULATION: MOVEMENT THROUGH SPACE

The path of our movement can be conceived as the perceptual thread that links the spaces of a building, or any series of interior or exterior spaces, together.

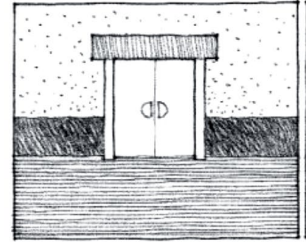
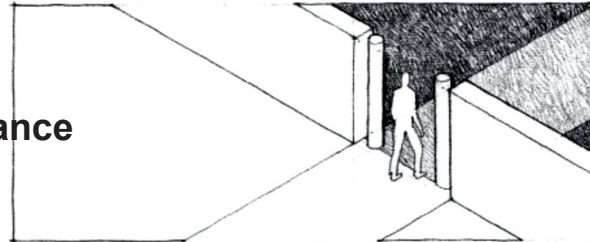
Since we move in Time through a Sequence of Spaces



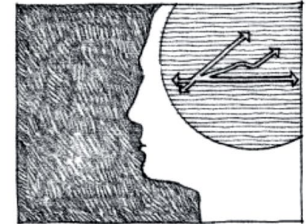
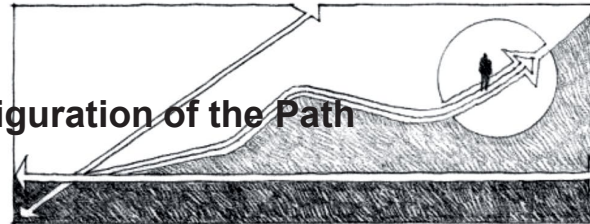
Approach



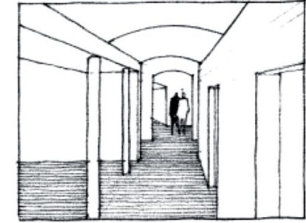
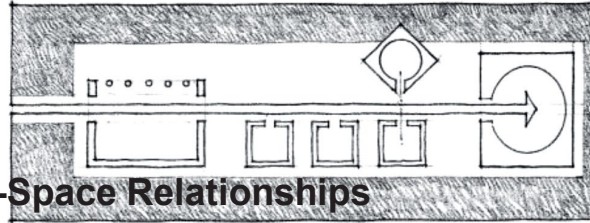
Entrance



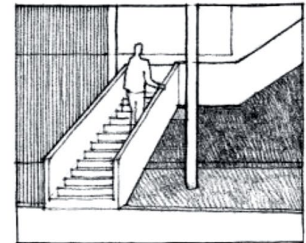
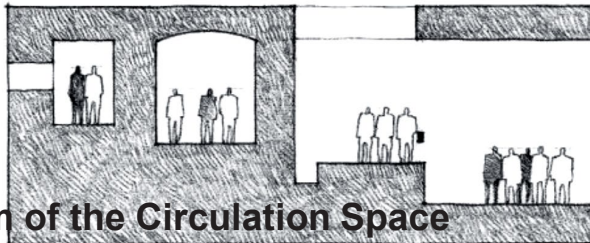
Configuration of the Path



Path-Space Relationships



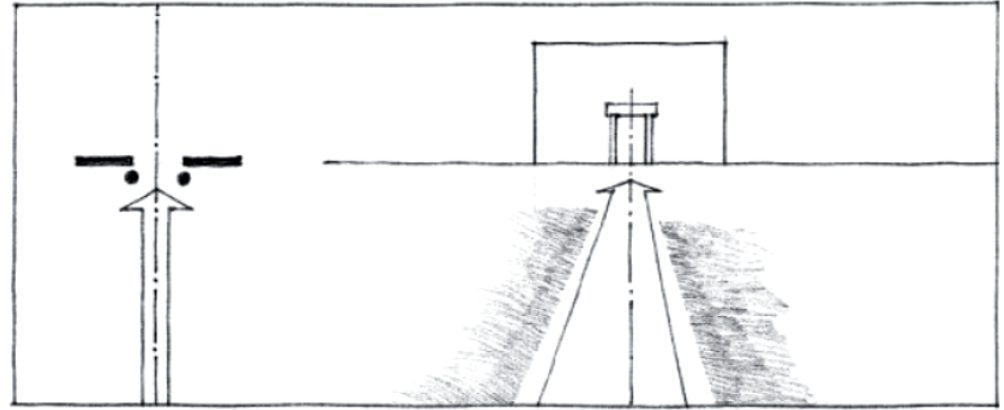
Form of the Circulation Space



APPROACH

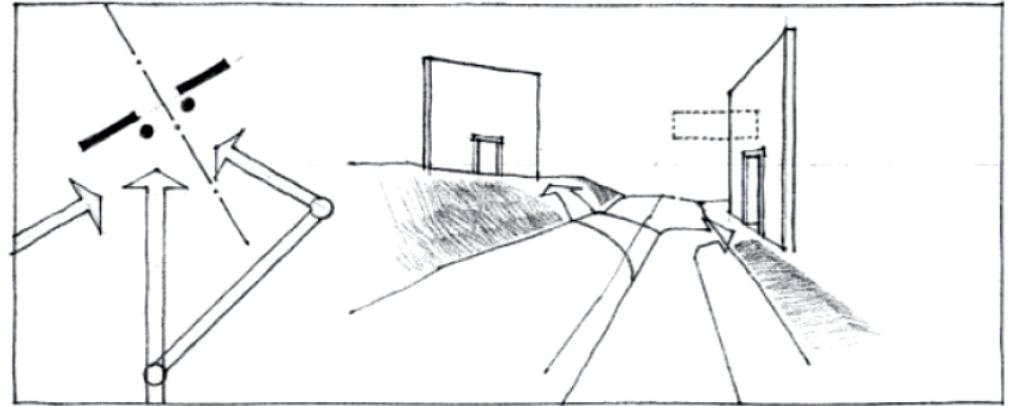
Frontal

A frontal approach leads directly to the entrance of a building along a straight, axial path. The visual goal that terminates the approach is clear; it may be the entire front facade of a building or an elaborated entrance within the plane.



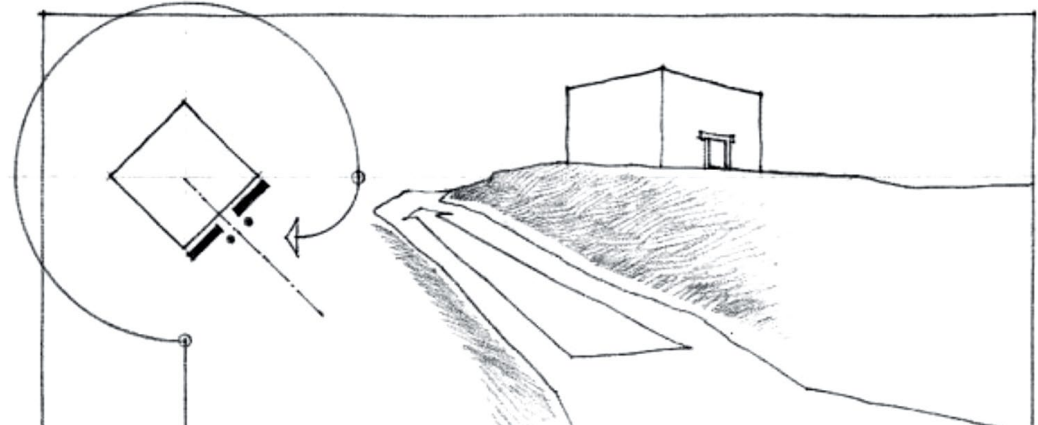
Oblique

An oblique approach enhances the effect of perspective on the front facade and form of a building. The path can be redirected one or more times to delay and prolong the sequence of the approach. If a building is approached at an extreme angle, its entrance can project beyond its facade to be more clearly visible.



Spiral

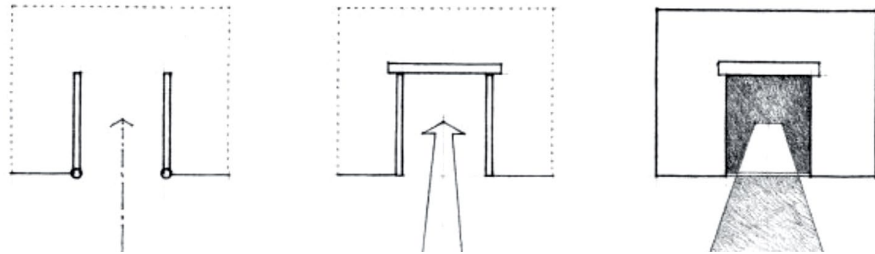
A spiral path prolongs the sequence of the approach and emphasizes the three-dimensional form of a building as we move around its perimeter. The building entrance might be viewed intermittently during the approach to clarify its position or it may be hidden until the point of arrival.



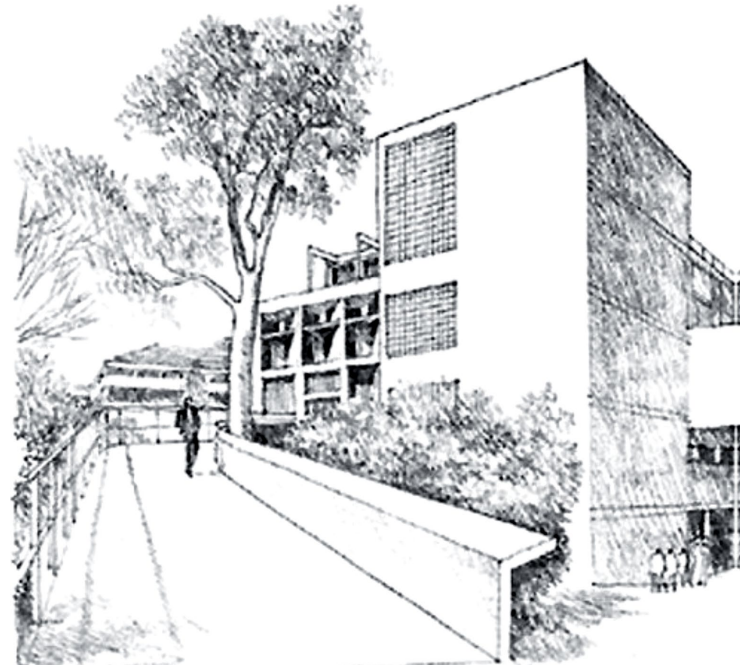
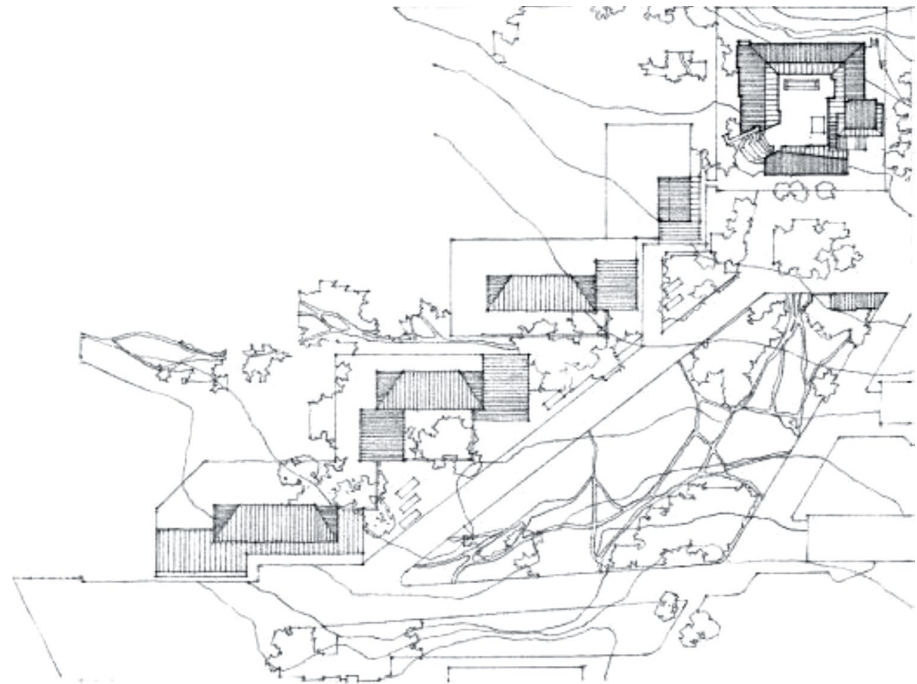
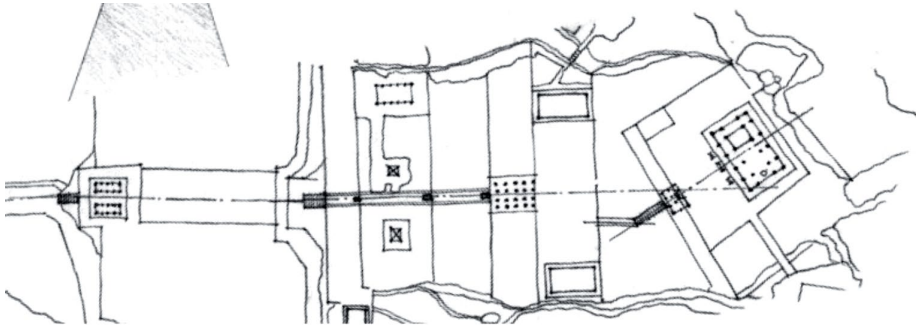
APPROACH



Villa Barbaro

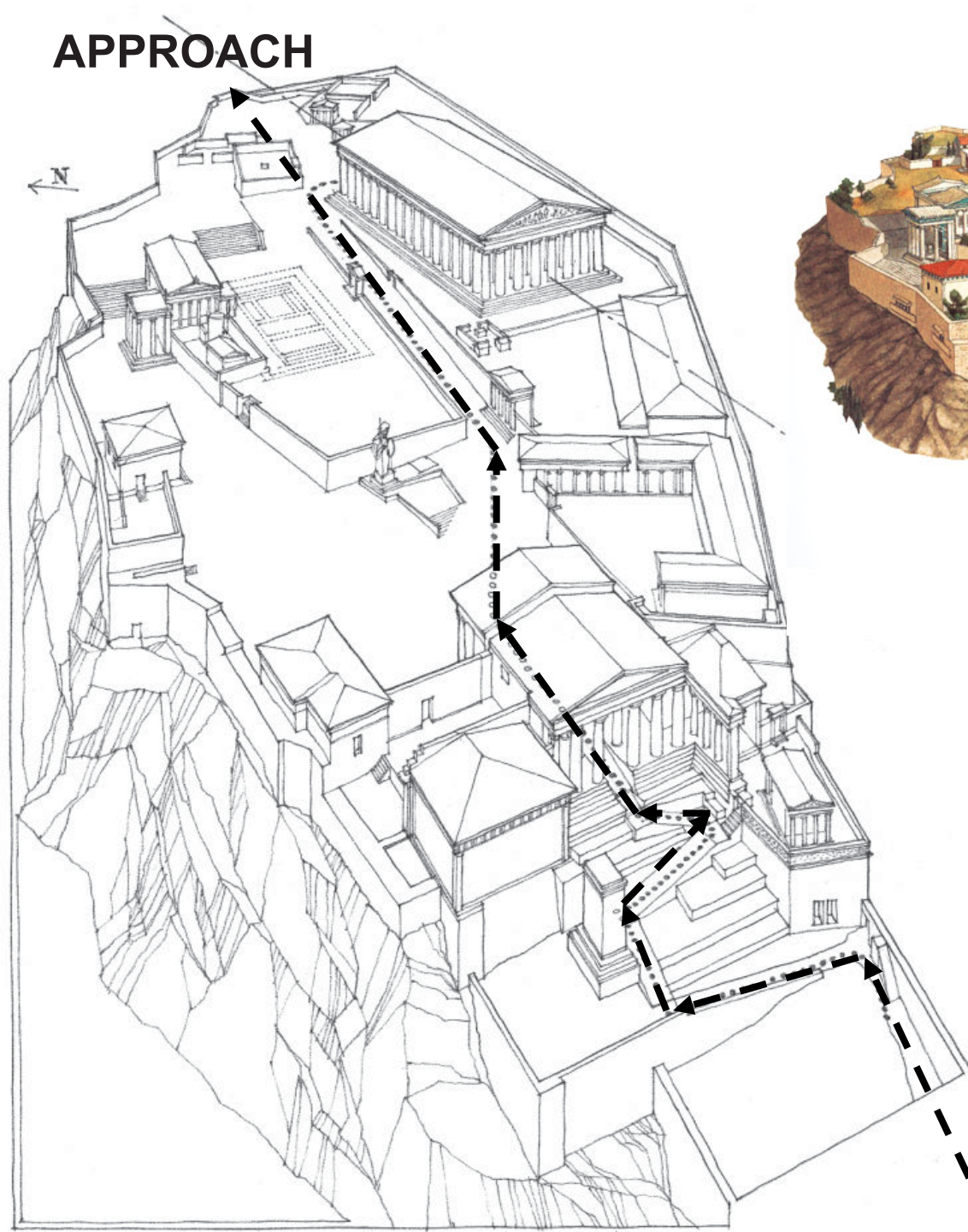


Portals and gateways have traditionally been means of orienting us to the path beyond and welcoming or guarding against our entry.



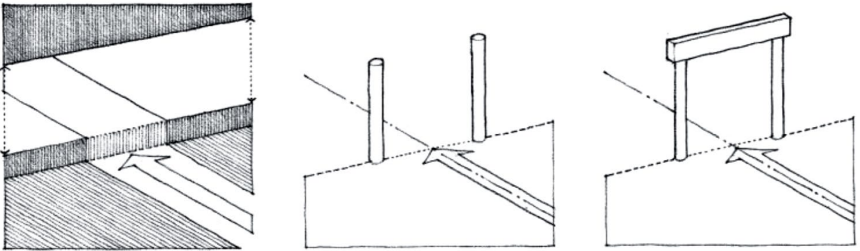
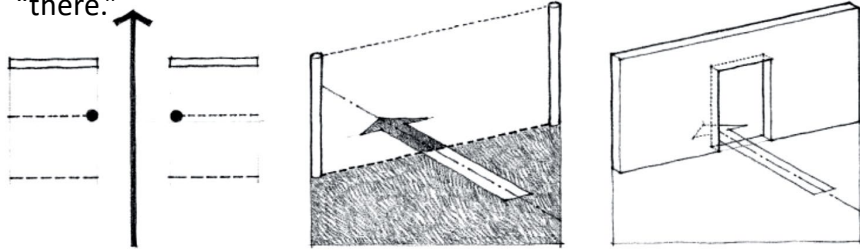
Ramp into and through the Carpenter Center for the Visual Arts

APPROACH

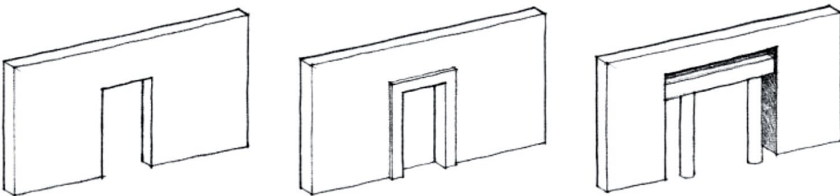


ENTRANCE

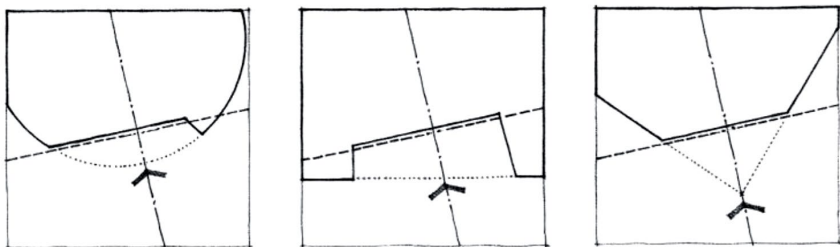
Entering a building, a room within a building, or a defined field of exterior space, involves the act of penetrating a vertical plane that distinguishes one space from another and separates "here" from "there."



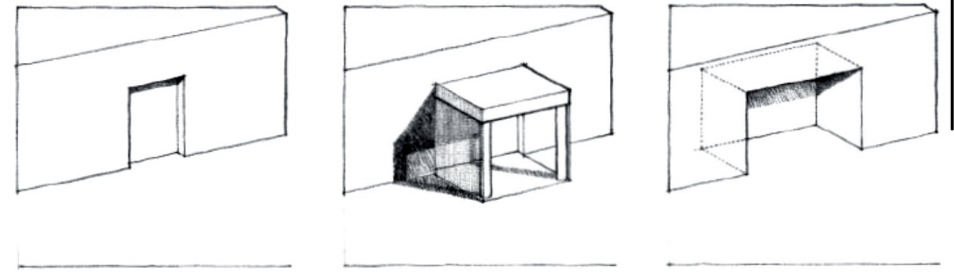
Wall is used to define and enclose a space or series of spaces, an entrance is accommodated by an opening in the plane of the wall



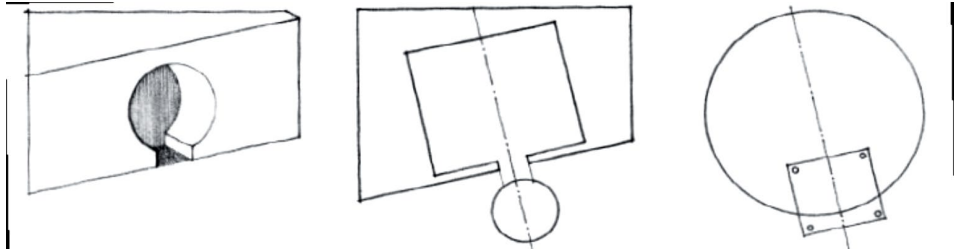
The entrance into the space is best signified by establishing a real or implied plane perpendicular to the path of the approach.



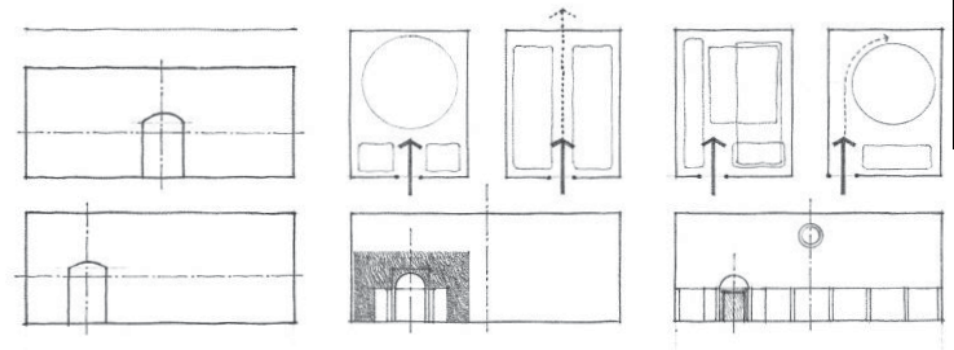
Entrances may be grouped formally into the following categories: **flush, projected, and recessed**



entrance can be similar to, and serve as a preview of the form



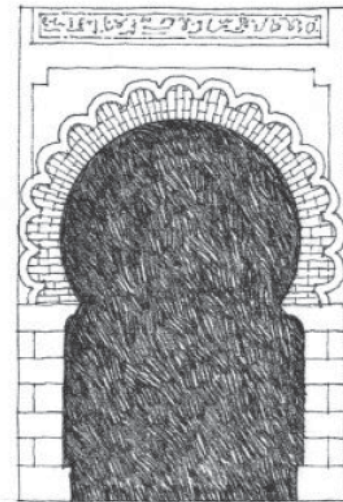
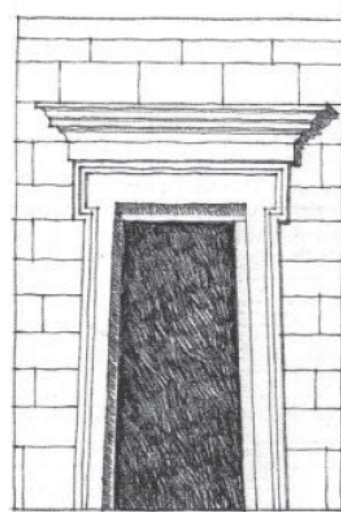
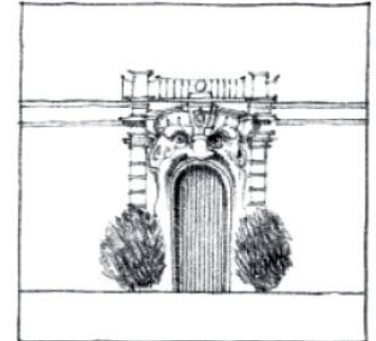
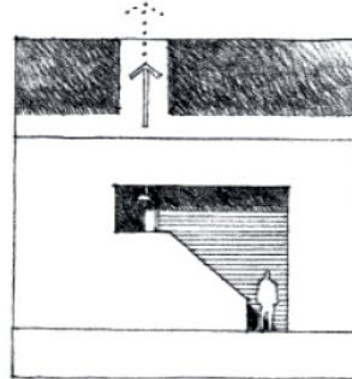
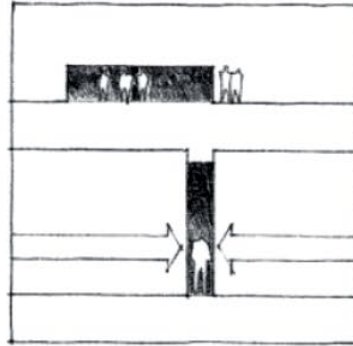
The location of an entrance relative to the form of the space being entered will determine the configuration of the path and the pattern of the activities within the space



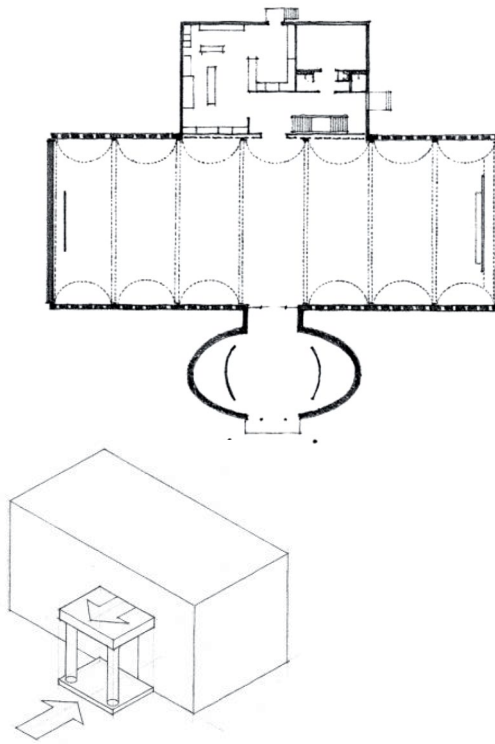
ENTRANCE

The notion of an entrance can be visually reinforced by:

- making the opening lower, wider, or narrower than anticipated
- making the entrance deep or circuitous
- articulating the opening with ornamentation or decorative embellishment



ENTRANCE

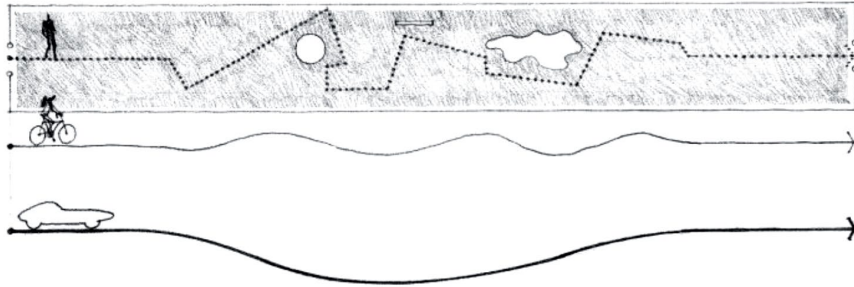


Merchants' National Bank

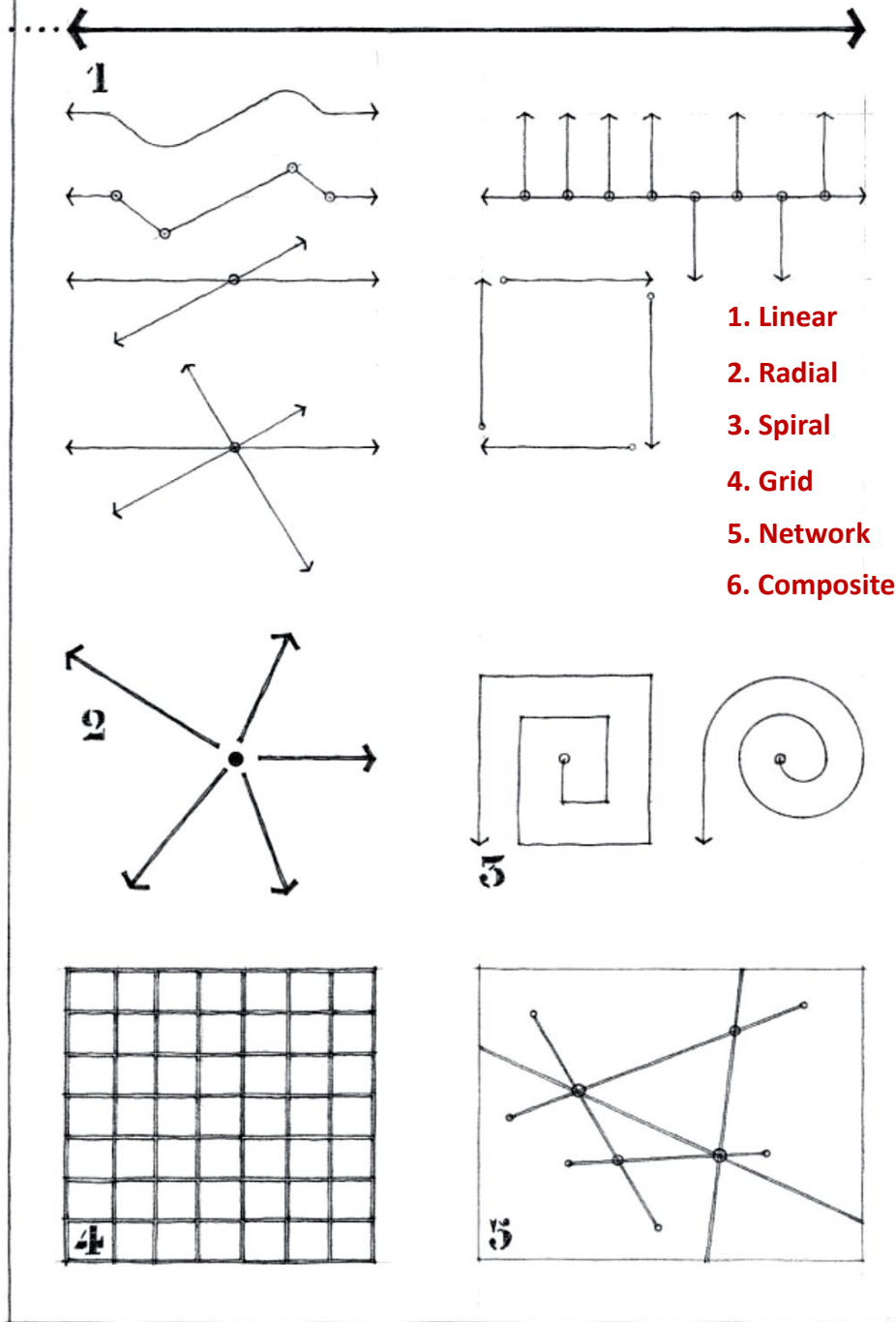
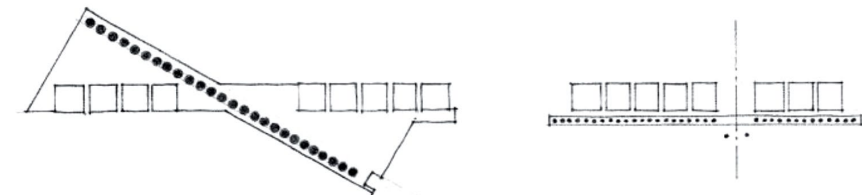
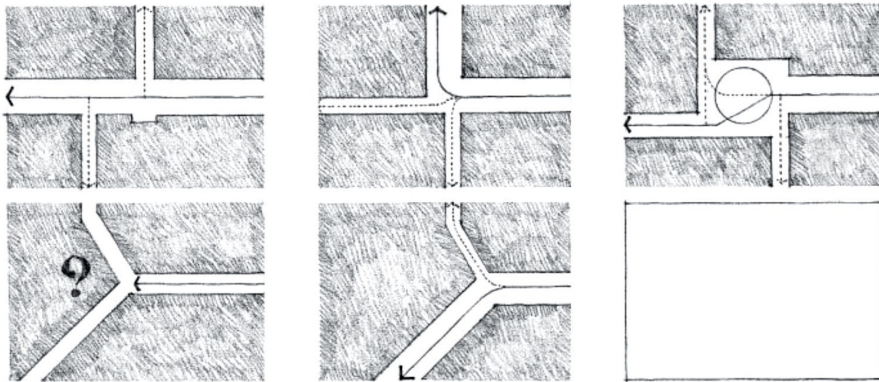


CONFIGURATION OF THE PATH

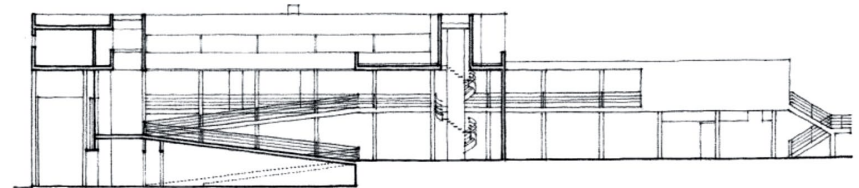
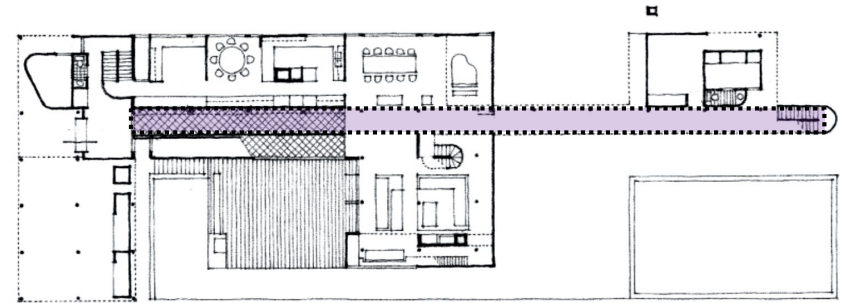
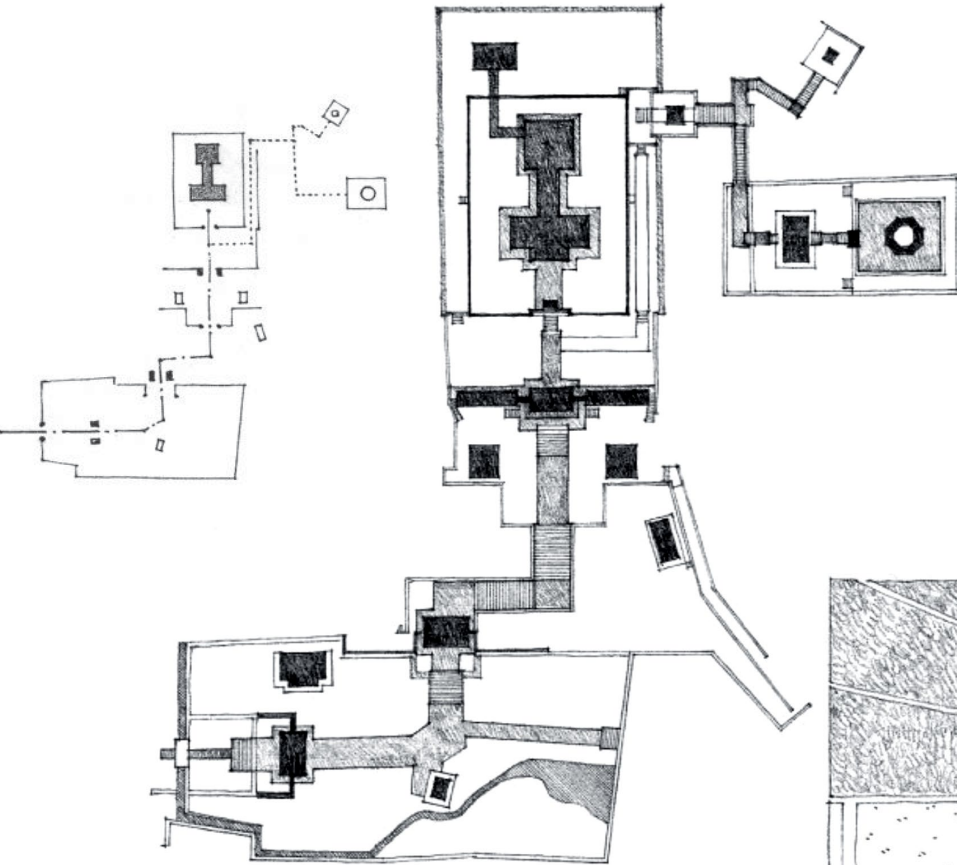
All paths of movement, whether of people, cars, goods, or services, are linear in nature.



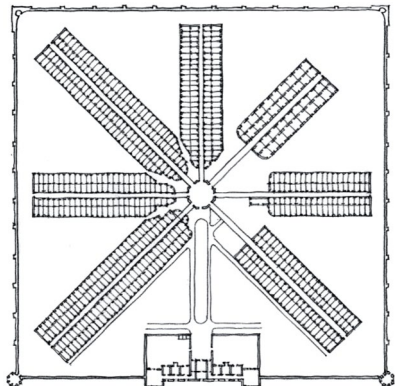
The intersection or crossing of paths is always a point of decision-making for the person approaching it. The continuity and scale of each path at an intersection can help us distinguish between major routes leading to major spaces and secondary paths leading to lesser spaces.



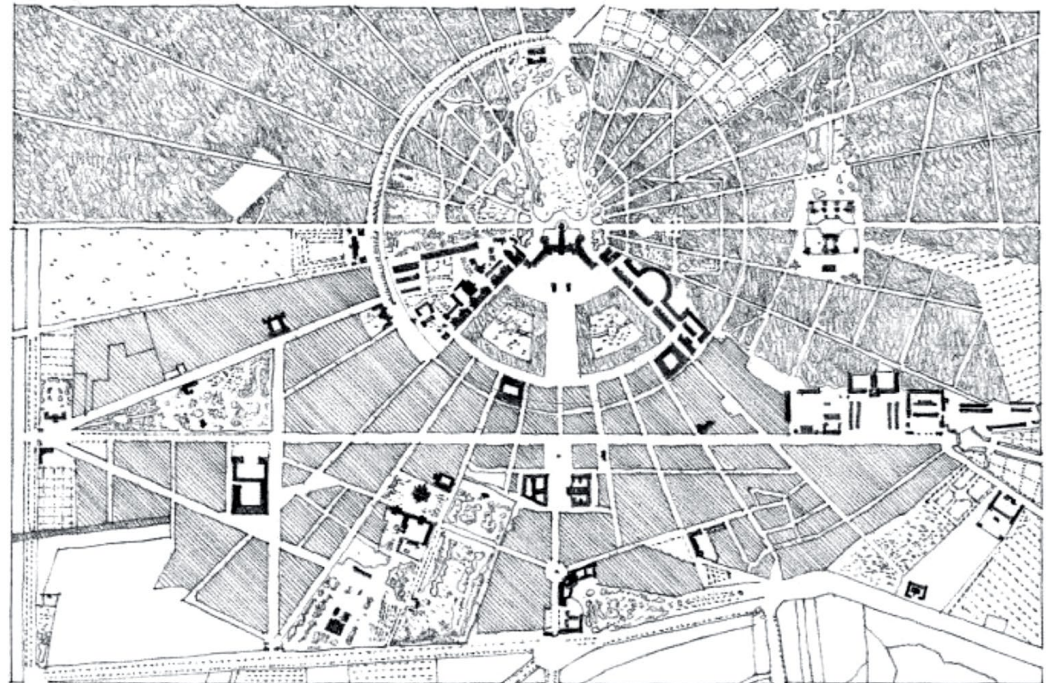
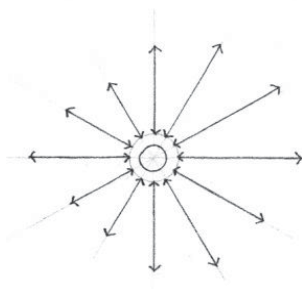
CONFIGURATION OF THE PATH



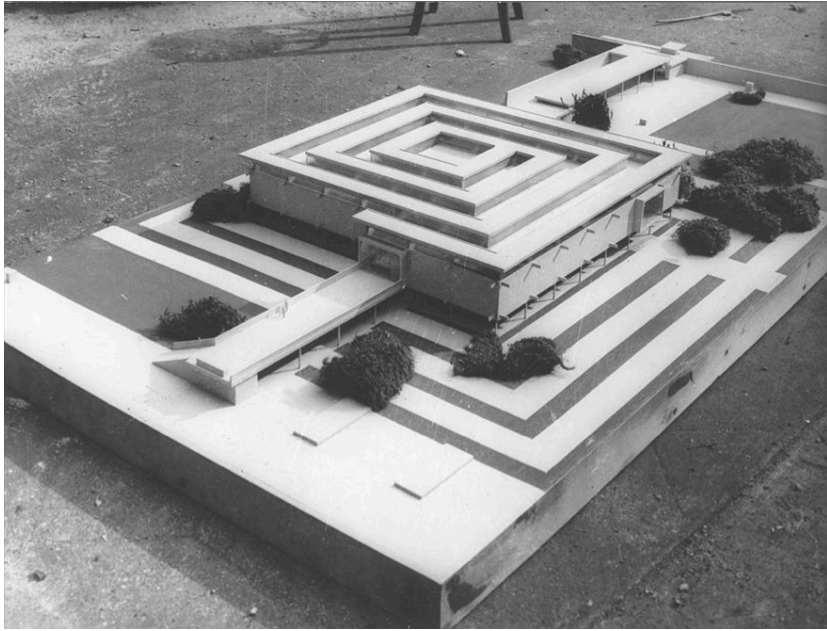
House in Old Westbury



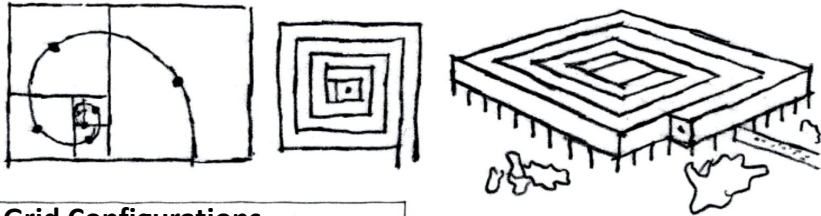
Radial Configurations



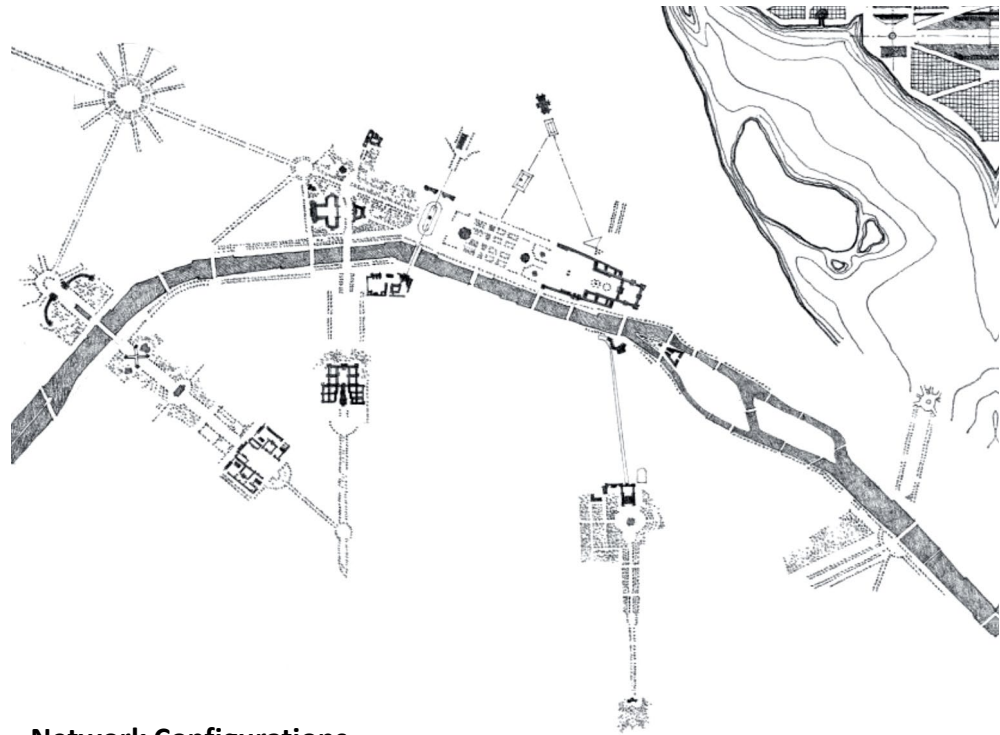
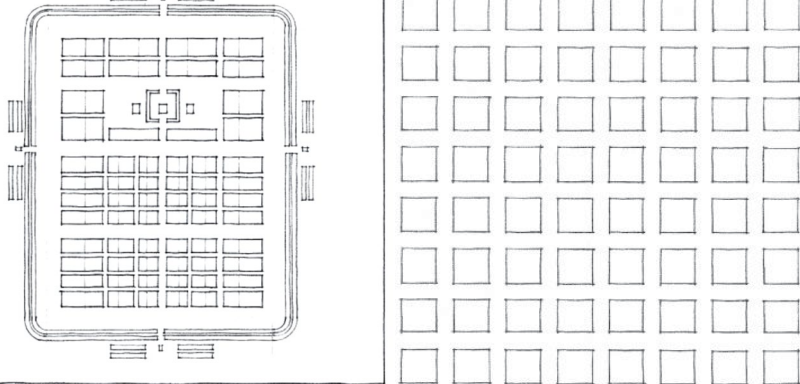
CONFIGURATION OF THE PATH



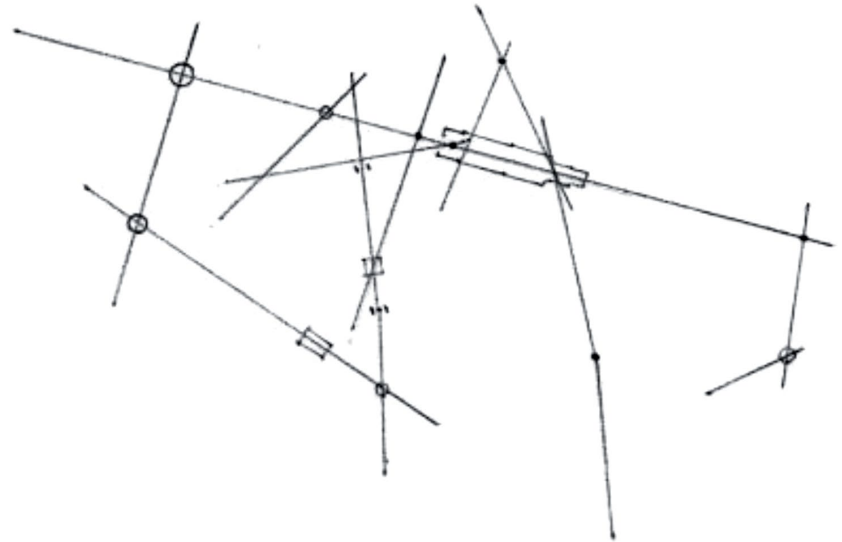
Museum of Endless Growth



Grid Configurations



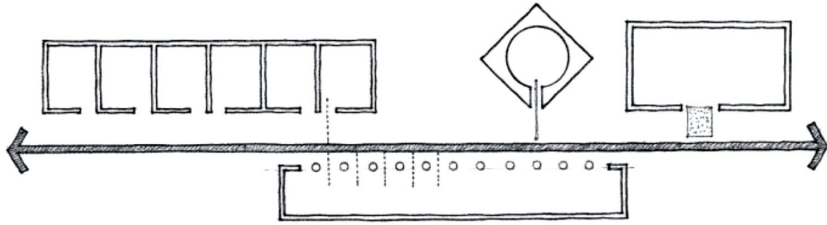
Network Configurations



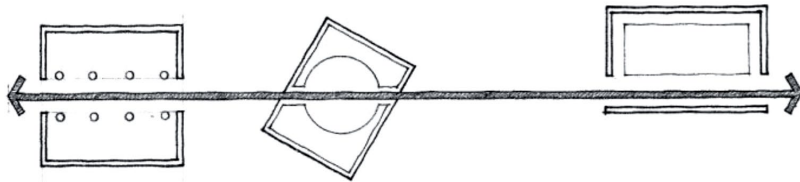
PATH-SPACE RELATIONSHIPS

Paths may be related to the spaces they link in the following ways. They may:

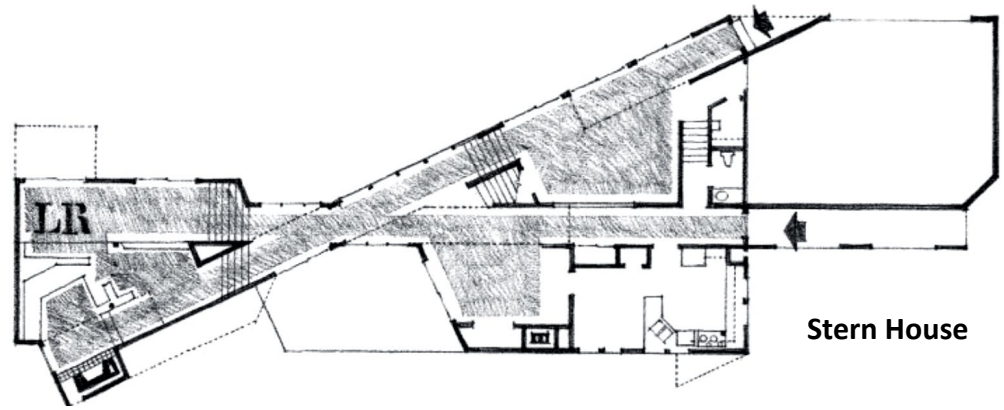
Pass by Spaces



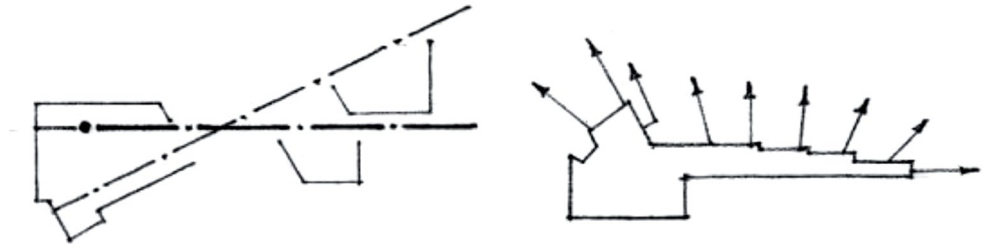
Pass through Spaces



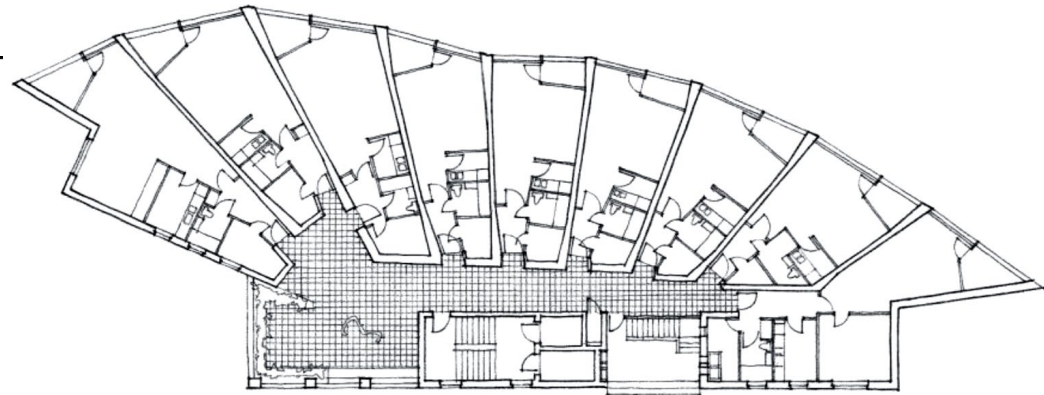
Terminate in a Space



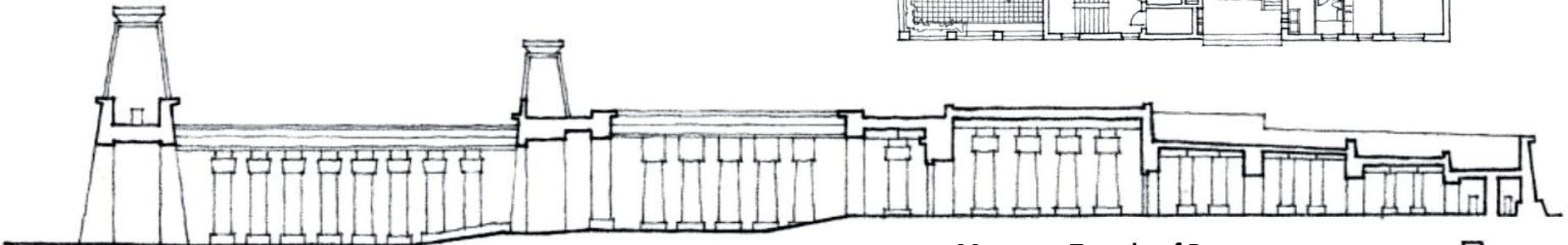
Stern House



Neur Vahr Apartment Building



Mortuary Temple of Rameses



FORM OF THE CIRCULATION SPACE

The form of a circulation space varies according to how:

- its boundaries are defined;
- its form relates to the form of the spaces it links;
- its qualities of scale, proportion, light, and view are articulated;
- entrances open onto it; and
- it handles changes in level with stairs and ramps.

A circulation space may be:

Enclosed

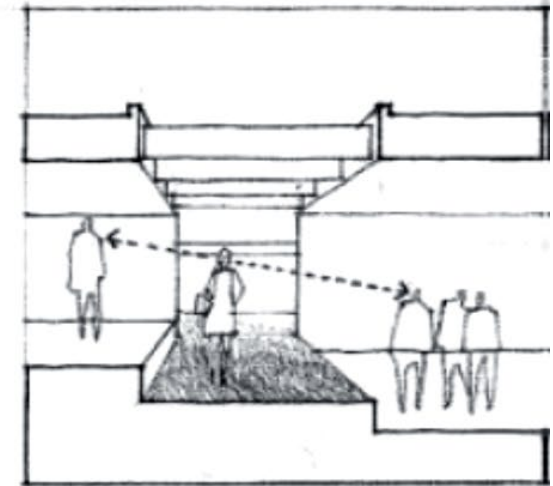
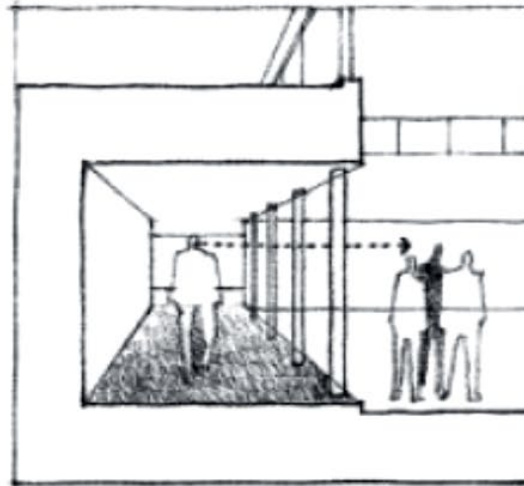
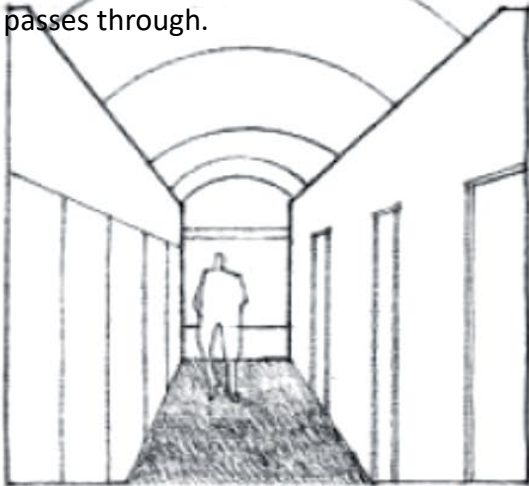
forming a public galleria or private corridor that relates to the spaces it links through entrances in a wall plane;

Open on One Side

forming a balcony or gallery that provides visual and spatial continuity with the spaces it links;

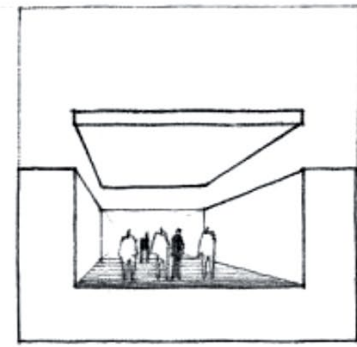
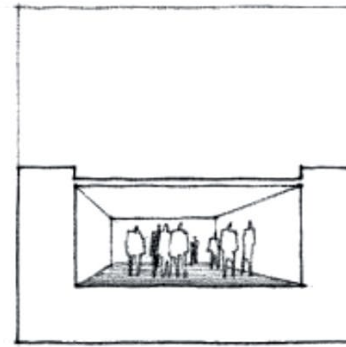
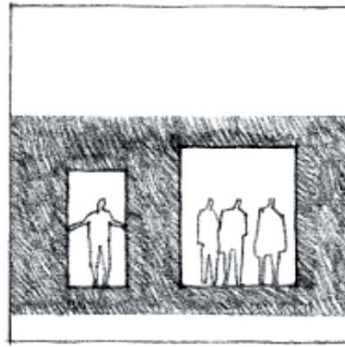
Open on Both Sides

forming a colonnaded passageway that becomes a physical extension of the space it passes through.

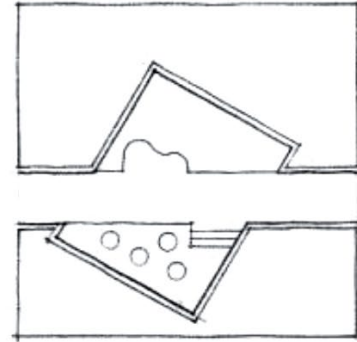
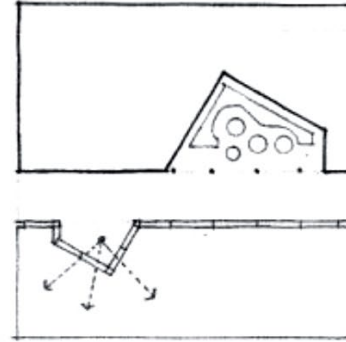
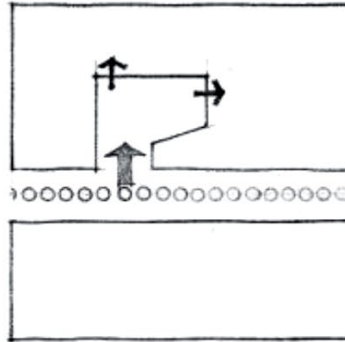


FORM OF THE CIRCULATION SPACE

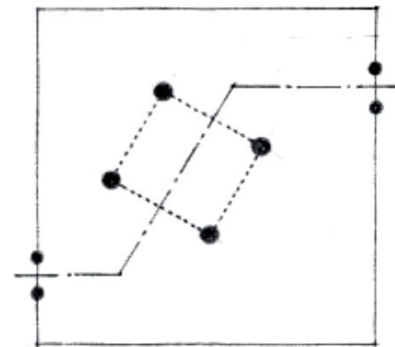
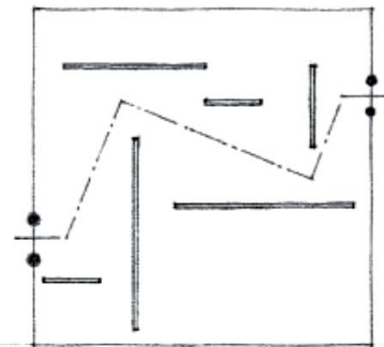
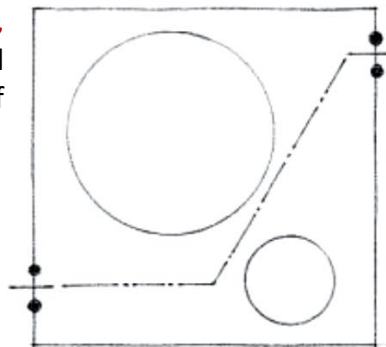
The width and height of a circulation space should be proportionate with the type and amount of movement it must handle. A distinction in scale should be established between a public promenade, a more private hall, and a service corridor.



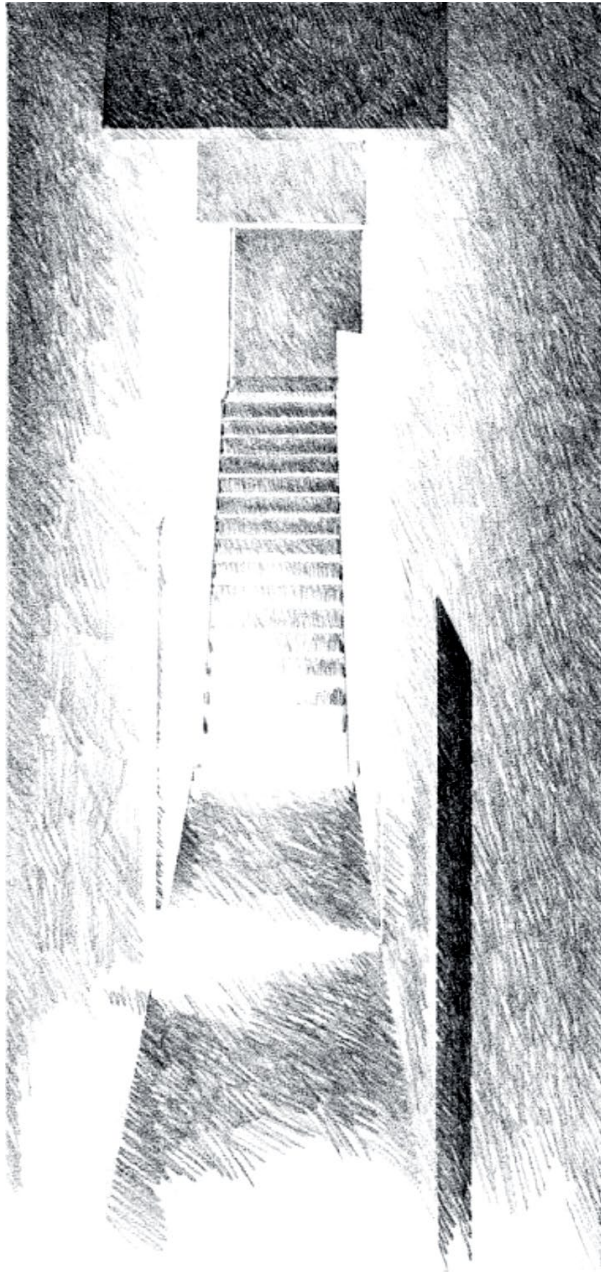
A narrow, enclosed path naturally encourages forward motion. To accommodate more traffic as well as to create spaces for pausing, resting, or viewing, sections of a path can be widened. The path can also be enlarged by merging with the spaces it passes through.



Within a large space, a path can be random, without form or definition, and be determined by the activities and arrangement of furnishings within the space.

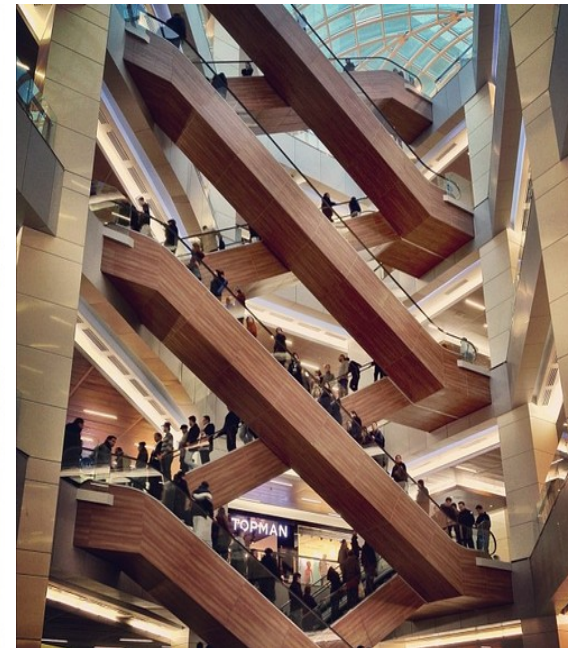
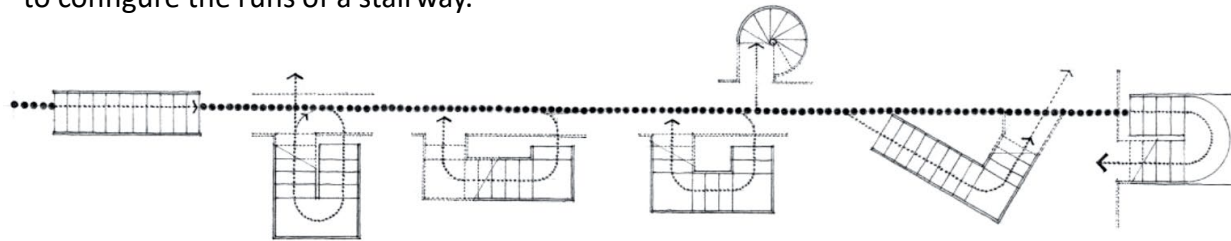
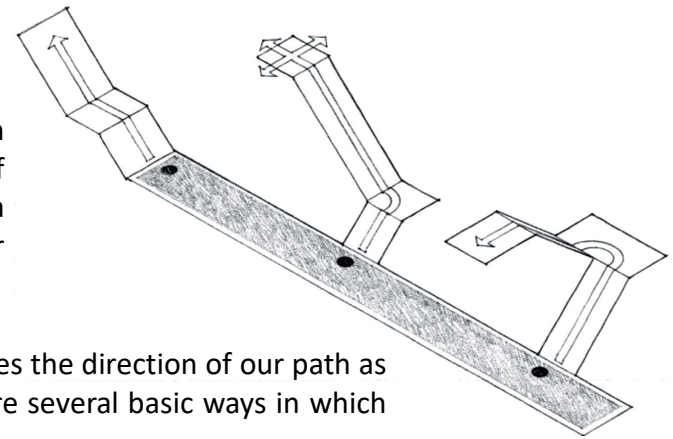


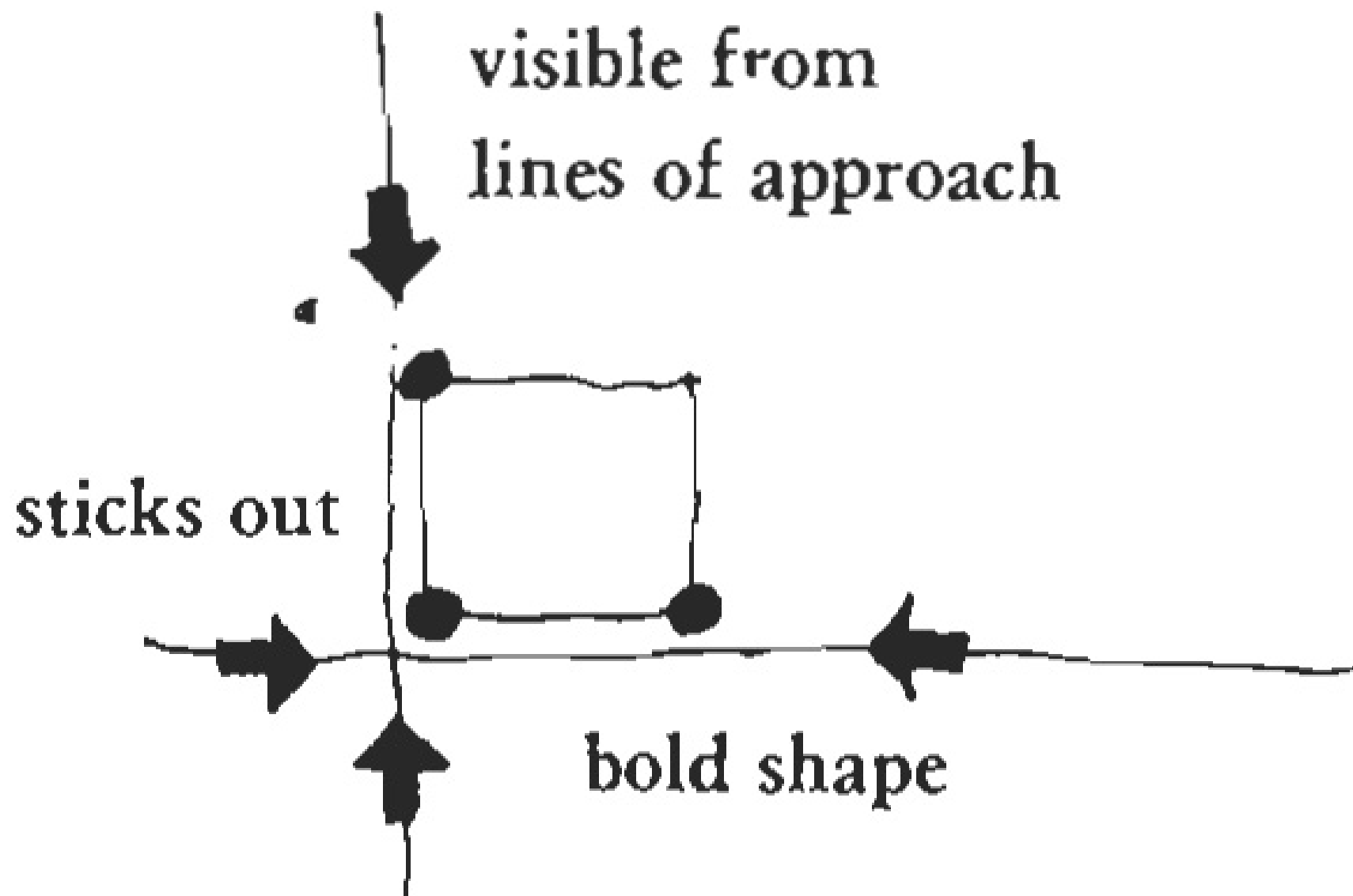
FORM OF THE CIRCULATION SPACE

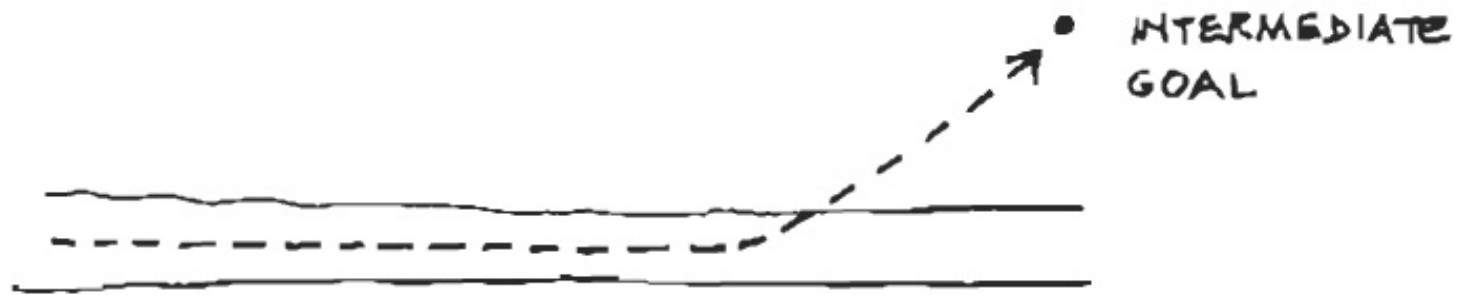


Stairs, in accommodating a change in level, can reinforce the path of movement, interrupt it, accommodate a change in its course, or terminate it prior to entering a major space

The configuration of a stairway determines the direction of our path as we ascend or descend its steps. There are several basic ways in which to configure the runs of a stairway.



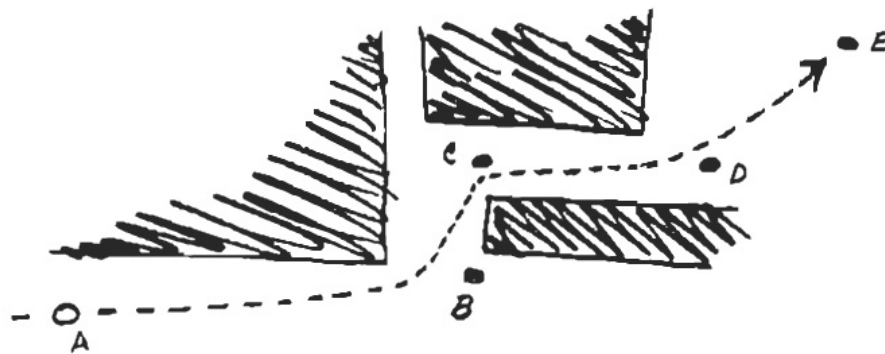




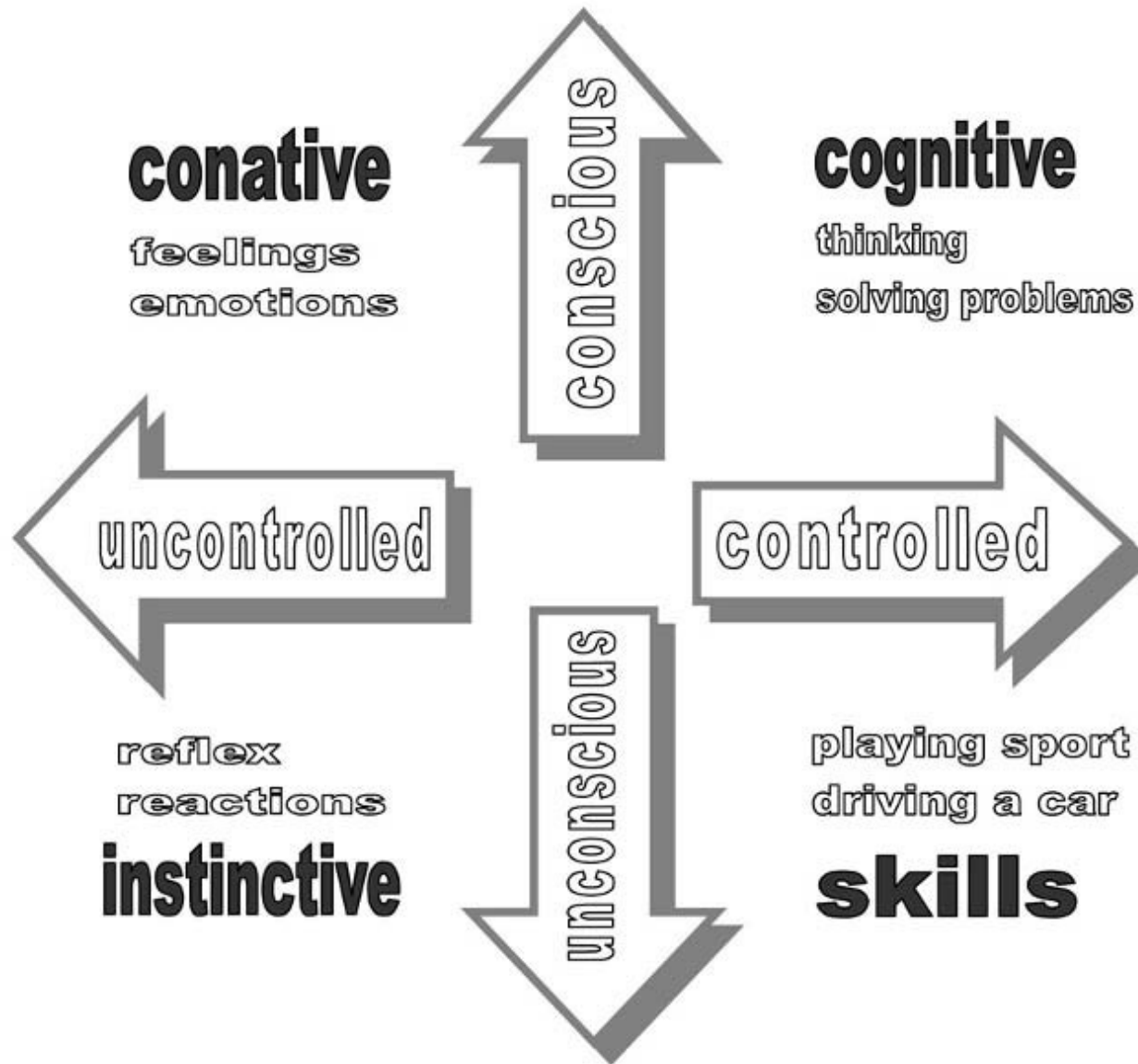
Path to a goal.



Series of goals.



The actual path.



two
independent dimensions of control and consciousness give
rise to four quite
different forms of behavior

CIRCULATION

MOVEMENT THROUGH SPACE

The circulation path can be conceived as the perceptual thread that links the spaces of a building, or any series of interior or exterior spaces, together.

Since we move in TIME, through a Sequence of Spaces, we experience a space in relation to where we've been, and where we anticipate going.

The following are Five principal components of a building's circulation system as positive elements that affect our perception of the building's forms and spaces.

CIRCULATION ELEMENTS

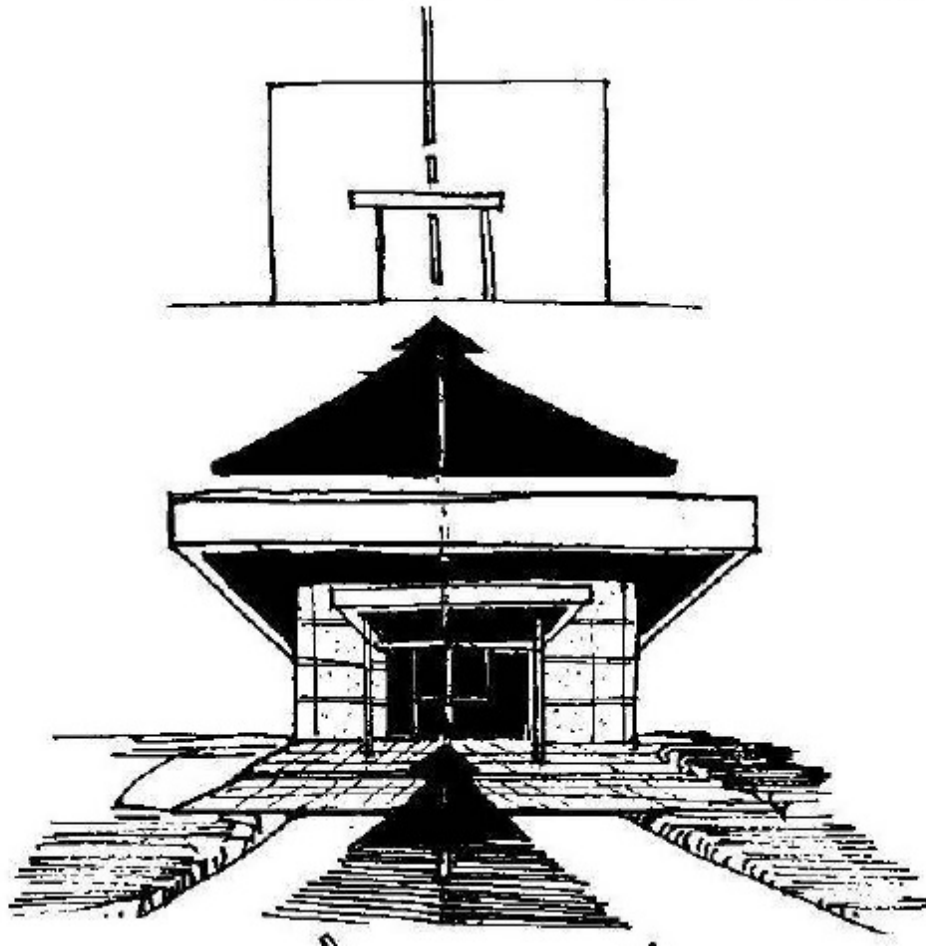
1. THE BUILDING APPROACH

The distant View

Prior to actually entering a building's interior, we approach its entrance along a path. This

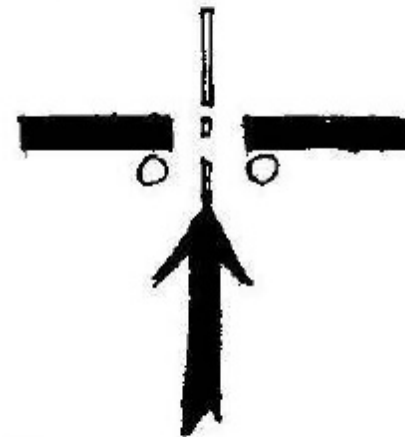
is the first phase of the circulation system, during which use are prepared to see, experience, and use the building's spaces.

The approach to a building and its entrance may vary in duration, from a few paces through a compressed space to a lengthy and circuitous route. It can be either.

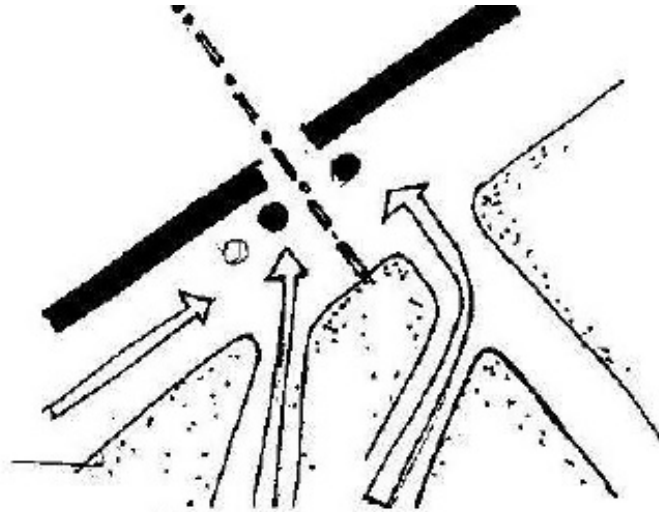


a. *Frontal*

- A frontal approach leads directly to a building's entrance along a straight, axial path.

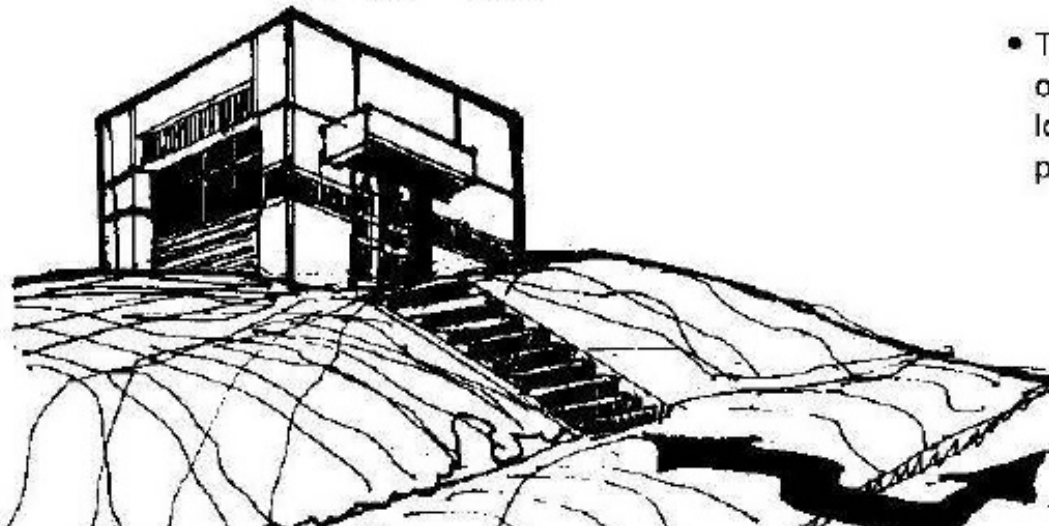


- The visual goal that terminates the approach is clear; it can be the entire front facade of a building or an elaborated entrance within it.



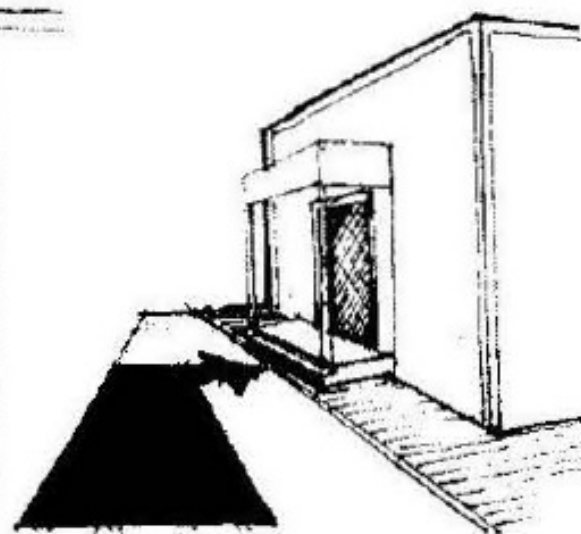
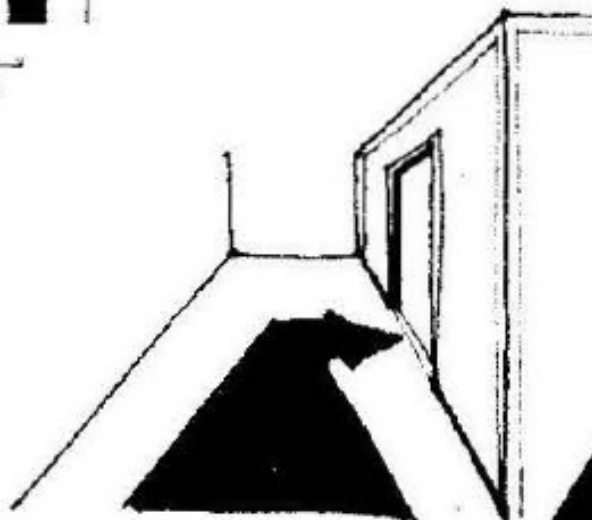
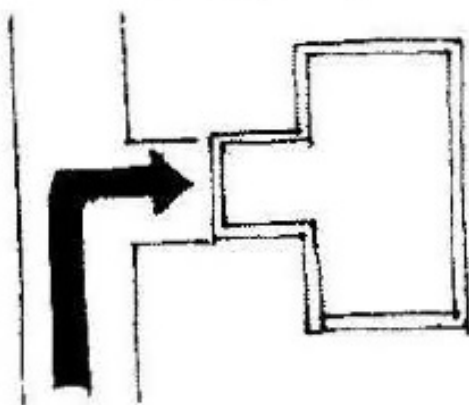
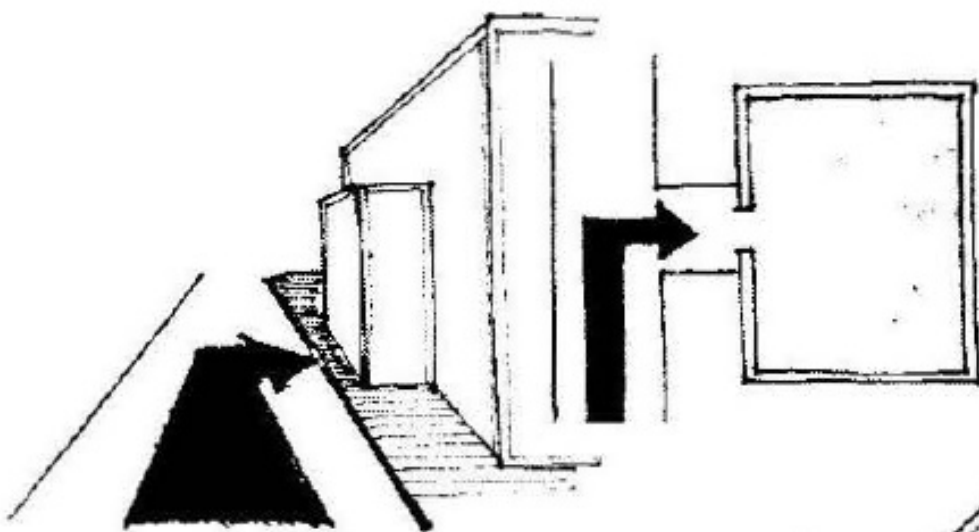
b. *Oblique*

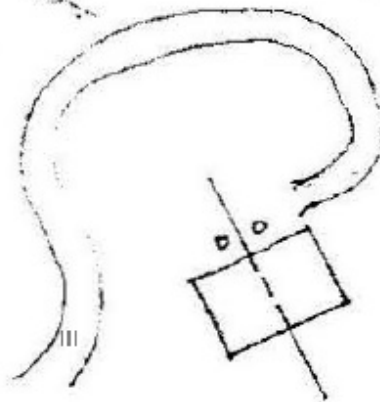
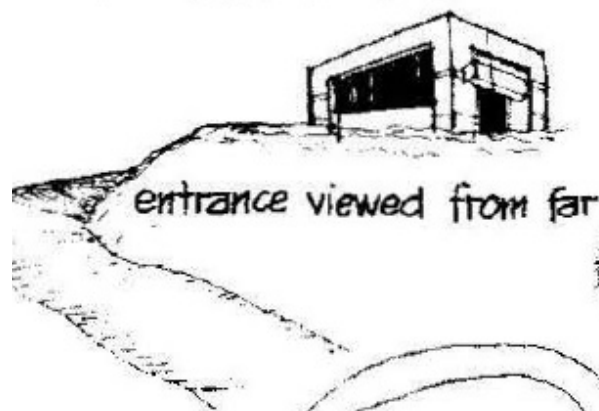
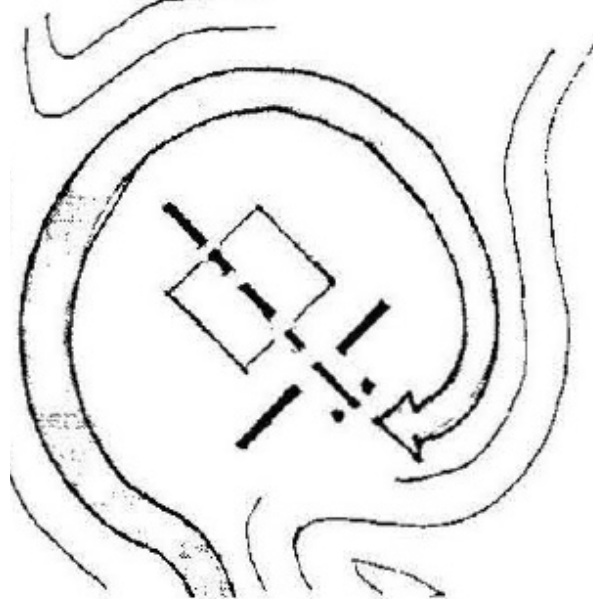
- An oblique approach enhances the effect of perspective on a building's front facade and form.



- The path can be re-directed one or more times to delay and prolong the sequence of the approach.

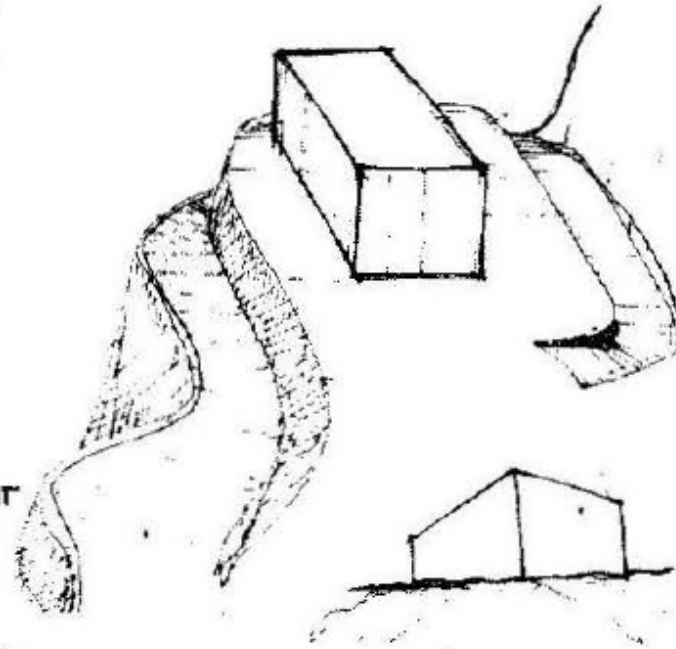
- If a building is approached at an extreme angle, its entrance can project beyond its facade to be more clearly visible.





c. *Spiral*

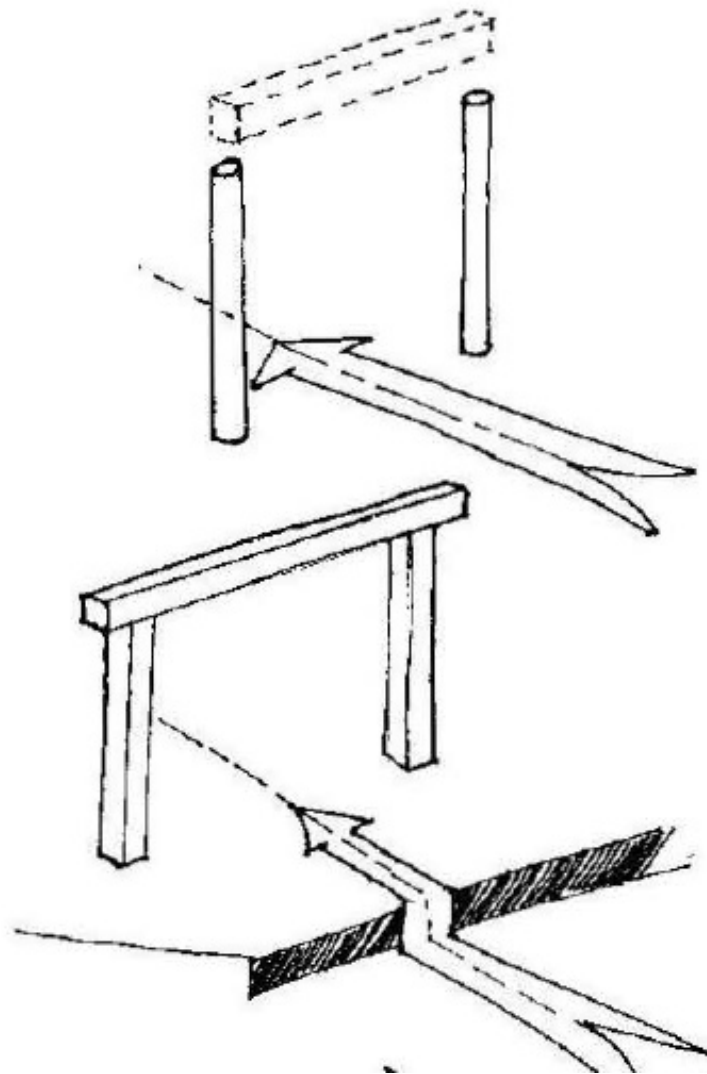
- A spiral path prolongs the sequence of the approach, and emphasizes the three-dimensional form of a building as it moves around the building's perimeter.



entrance not viewed from approach

- The building's entrance might be viewed, intermittently during the approach to clarify its position, or it can be hidden until the point of arrival.

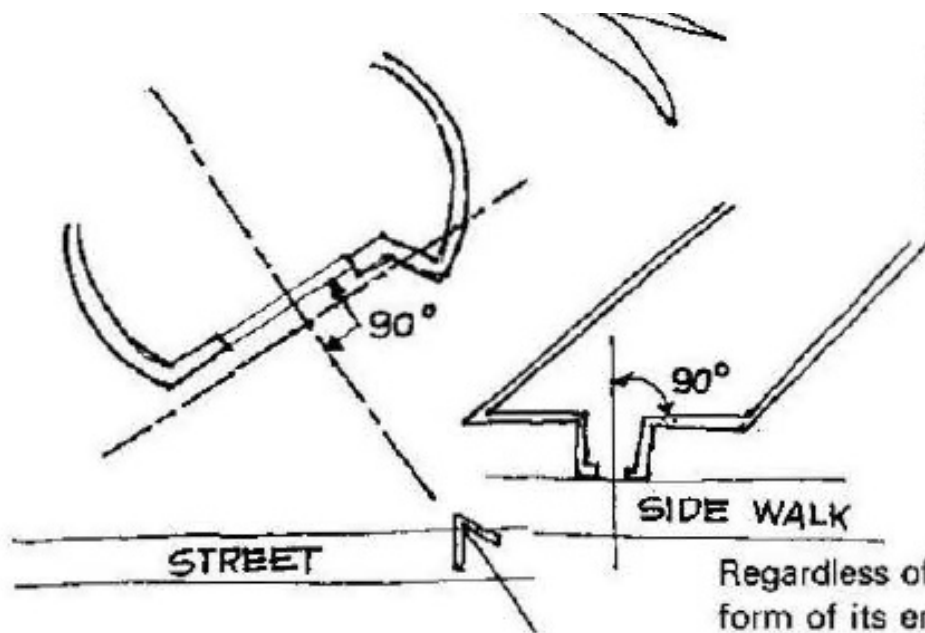
2. THE BUILDING ENTRANCE



From Outside to Inside

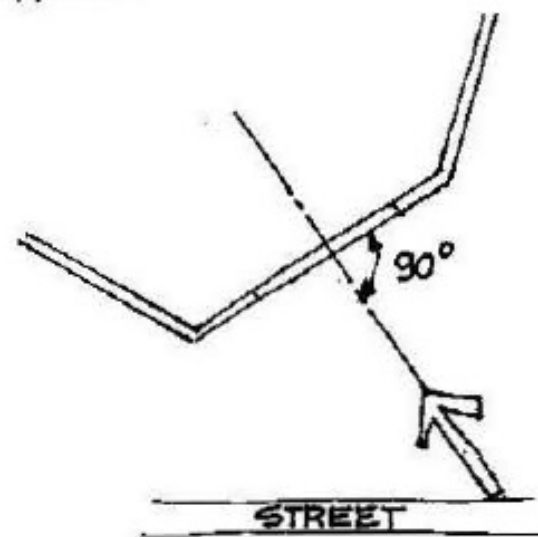
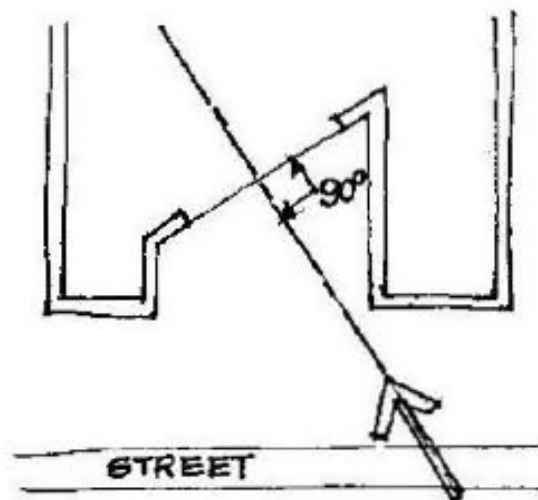
Entering a building, a room within a building, or a defined field of exterior space, involves the act of penetrating a vertical plane that distinguishes one space from another, and separates "here" from "there".

It can be the passage through an implied, rather than real, plane established by two pillars or an overhead beam.



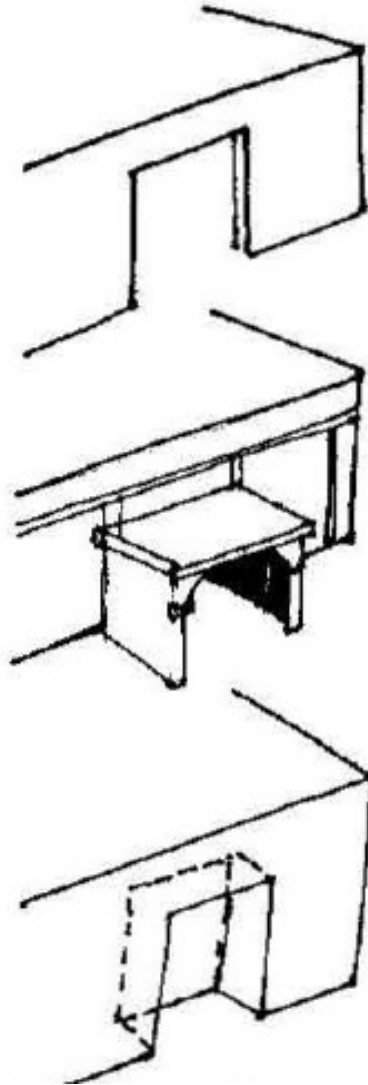
In more subtle situations, where visual and spatial continuity between two spaces is desired, a change in level can mark the passage from one place to another.

Regardless of the form of the space being entered, or the form of its enclosure, the entrance into the space is best signified by establishing a real or implied plane perpendicular to the path of the approach.



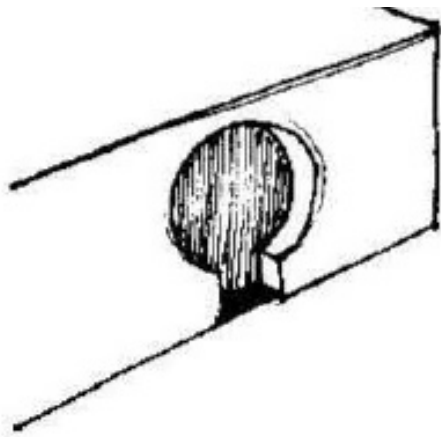
Entrance may be grouped formally into the following categories.

a. *Flush*—entrances maintain the continuity of a walls' surface, and can be, if desired, deliberately obscured.

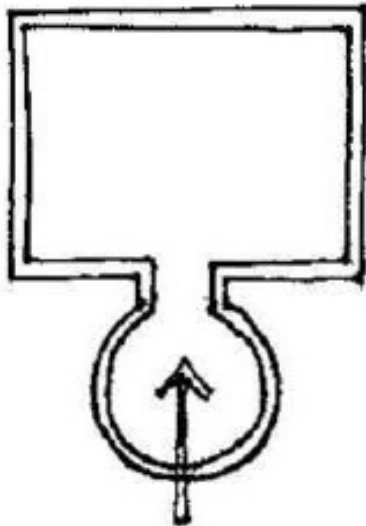


b. *Projected*—entrances announce their function to the approach and provide shelter overhead.

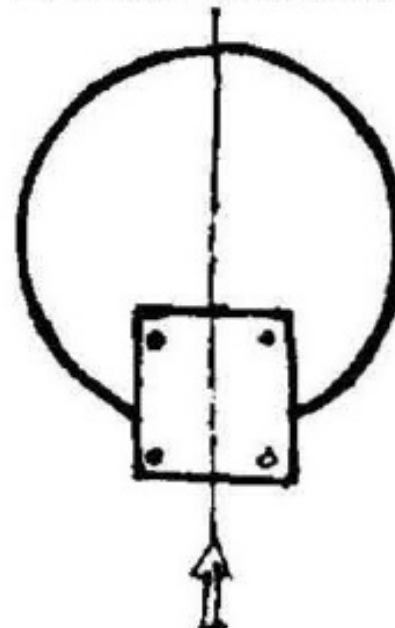
c. *Recessed*—entrances also provide shelter and receive a portion of exterior space into the realm of the building.

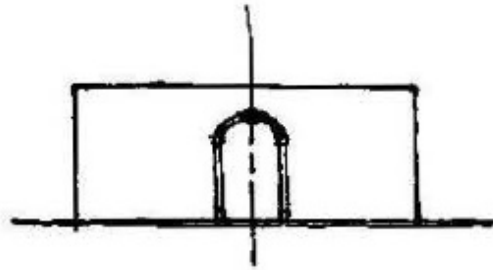


In each of the categories above, the form of the entrance can be similar to, and serve as a preview of, the form of the space being entered.

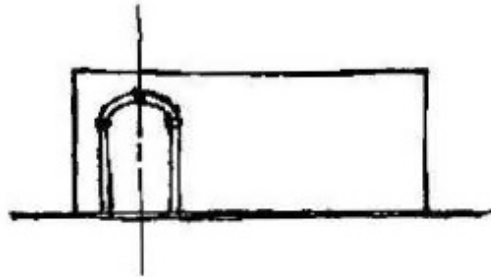


Or it can contrast with the form of the space to reinforce its boundaries and emphasize its character as a plane.





In terms of LOCATION, an entrance can be centered with the frontal plane of a building.

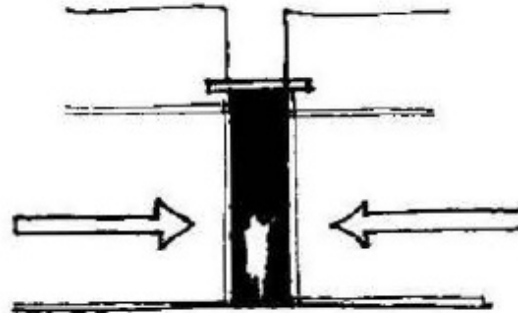


Or it can be placed off-center and create its own symmetrical condition about its opening.



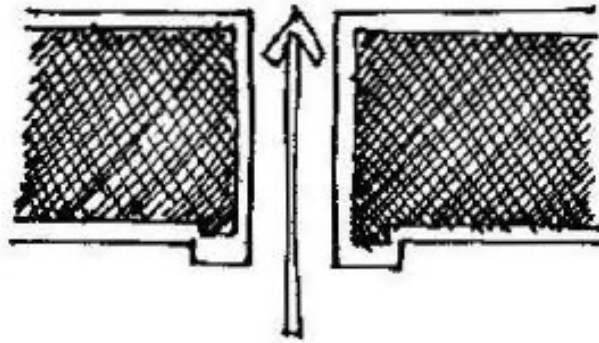
The NOTION of an entrance can be visually reinforced by:

- Making the opening lower, wider, or narrower than anticipated.

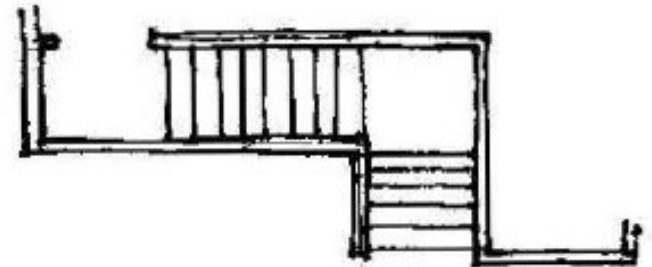
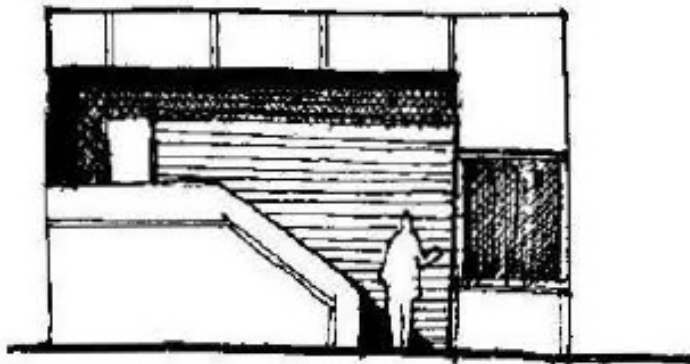


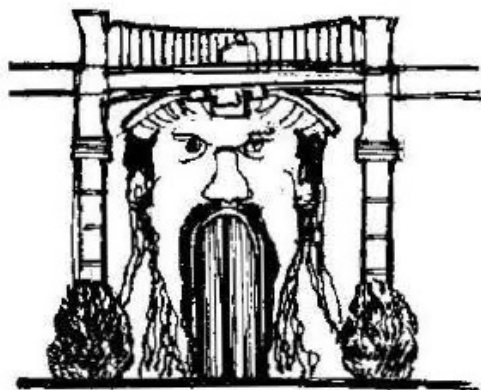
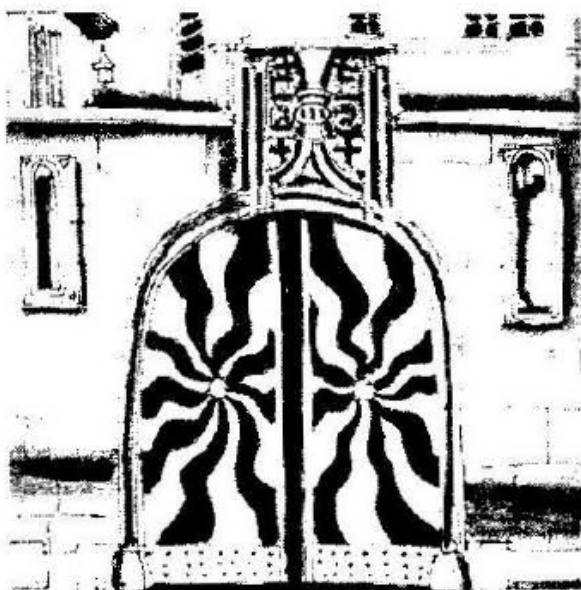
- Making the entrance extra deep.

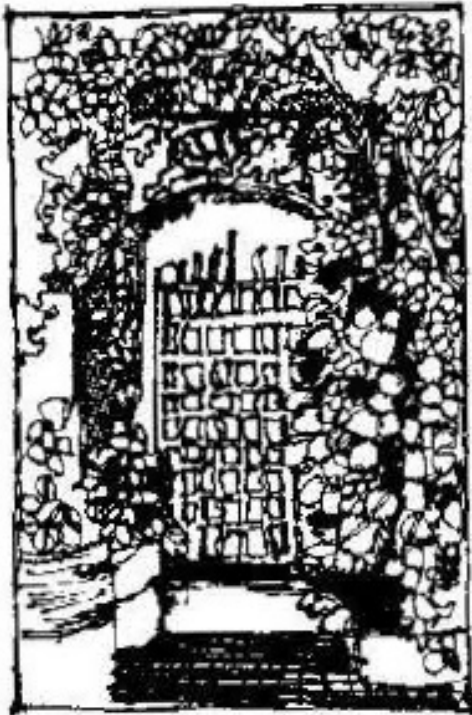
- Making the entrance extra deep.



- or Circuitous;
(Ramps, Stairs)

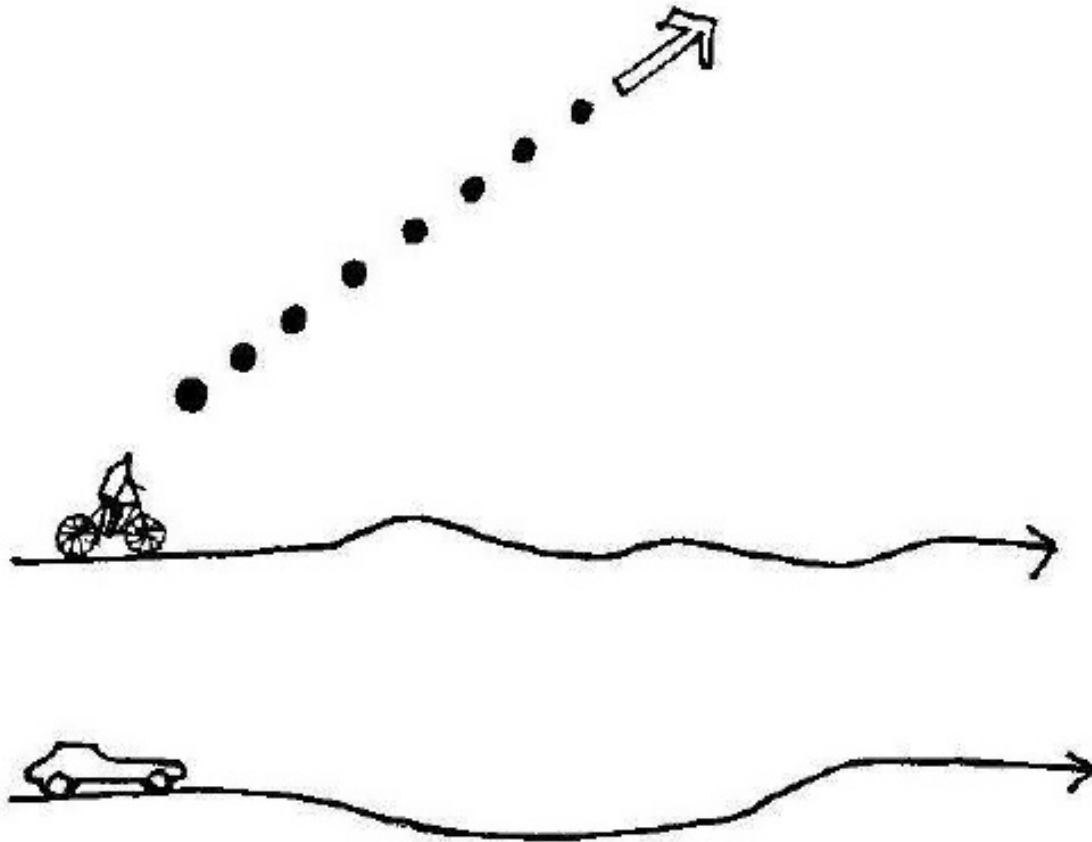






- Articulating the opening with ornamentation or decorative embellishment (climbing plants, sculpture, columns, statues, glass mosaic, etc.).

3. CONFIGURATION OF THE PATH

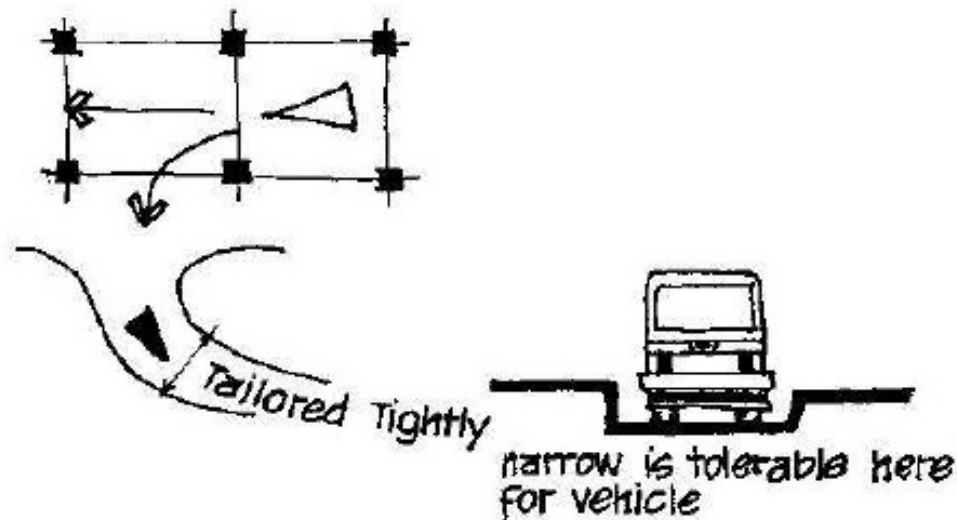


The sequence of Spaces

All paths of movement, whether of people, cars, goods or services, are linear in nature. And all paths have a starting point, from which we are taken through a sequence of spaces to our destination.

The Contour of a path depends on our mode of Transportation.

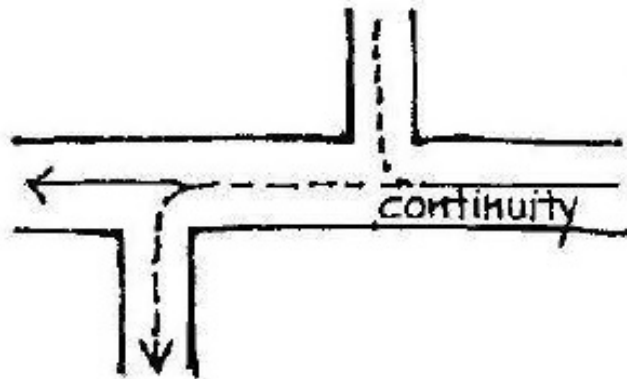
While people, as pedestrians, can turn, pause, stop, and rest at will, a bicycle has less freedom, and a car even less, in changing its pace and direction abruptly.



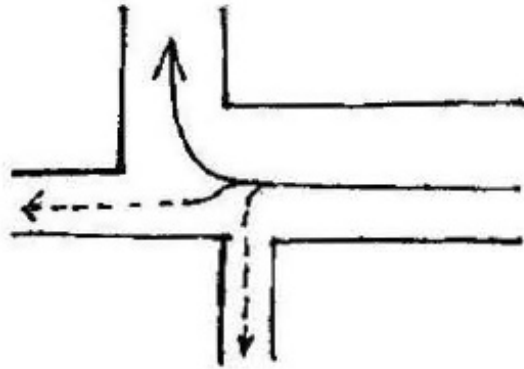
While a wheeled vehicle may require a path with smooth contours that reflect its turning radius, the width of the path can be tailored tightly to its dimensions.



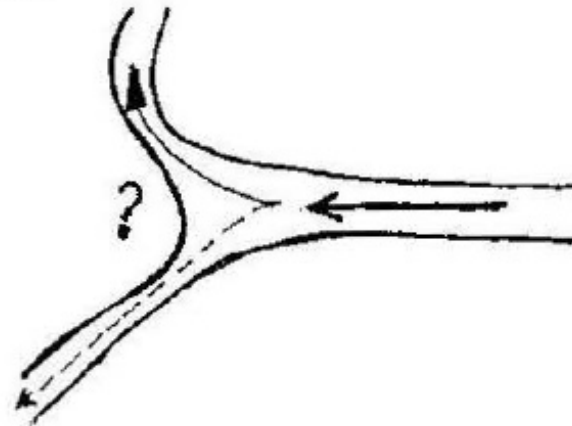
Pedestrians, on the other hand, although able to tolerate abrupt changes in direction, require a greater volume of space than their bodily dimensions, and greater freedom of choice along a path.



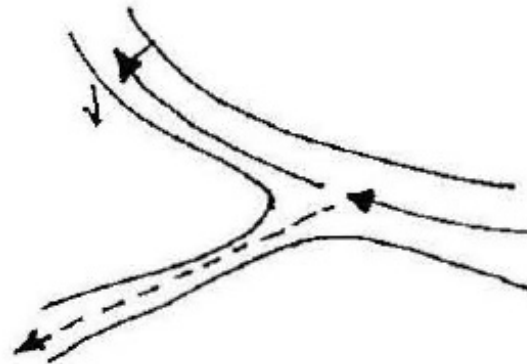
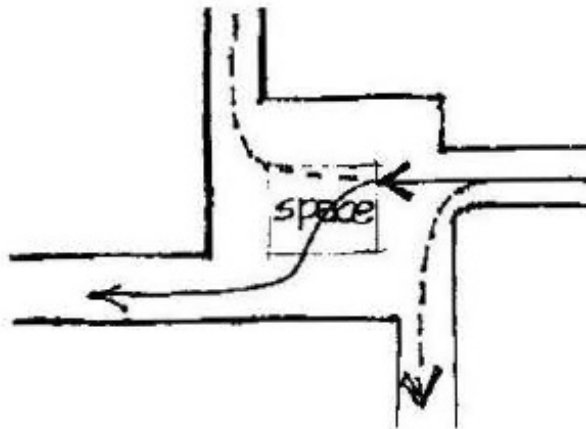
The Intersection or crossing of paths is always a point of decision making for the person approaching.



The continuity and scale of its path can help us distinguish between major routes leading to major spaces and secondary paths leading to lesser spaces.

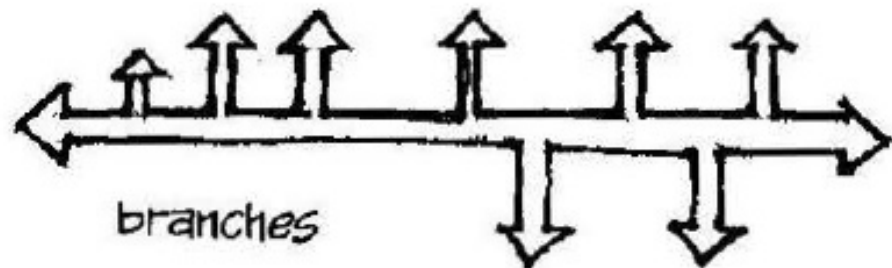
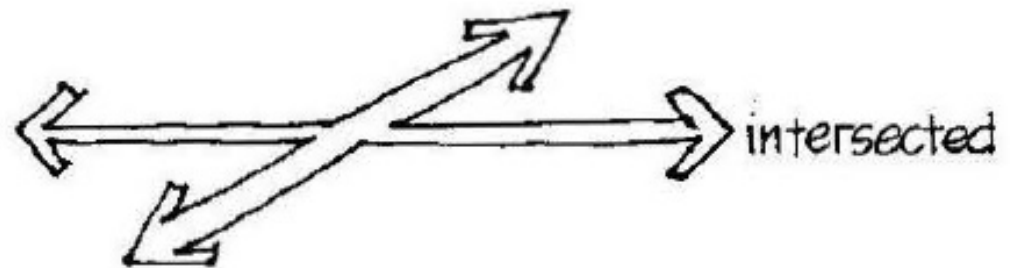
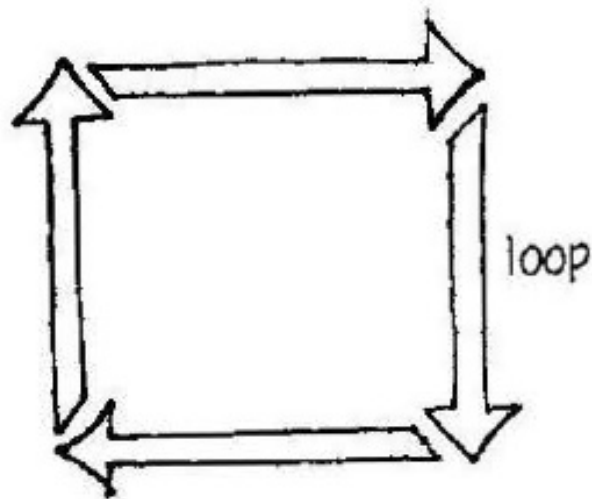
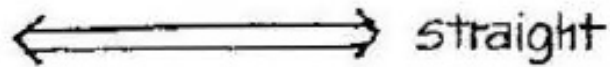


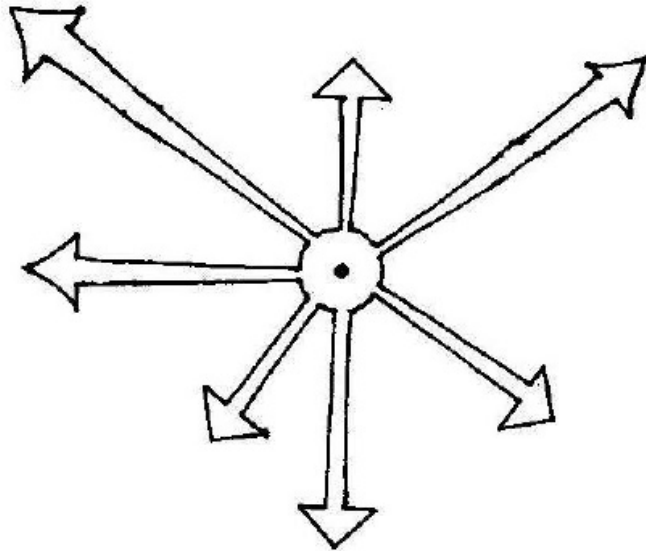
When the paths at a crossing are equivalent to one another, sufficient space should be provided to allow people to pause and orient themselves.



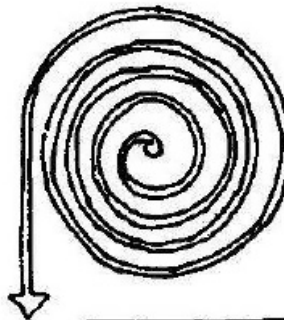
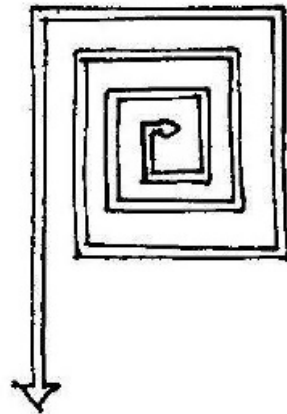
The nature of the path's configuration influences, or is influenced by, the organizational pattern of the spaces, it links. It can either be:

- a. **Linear**—all paths are linear. It can be curvilinear or segmented intersect other paths, have branches, form a loop.

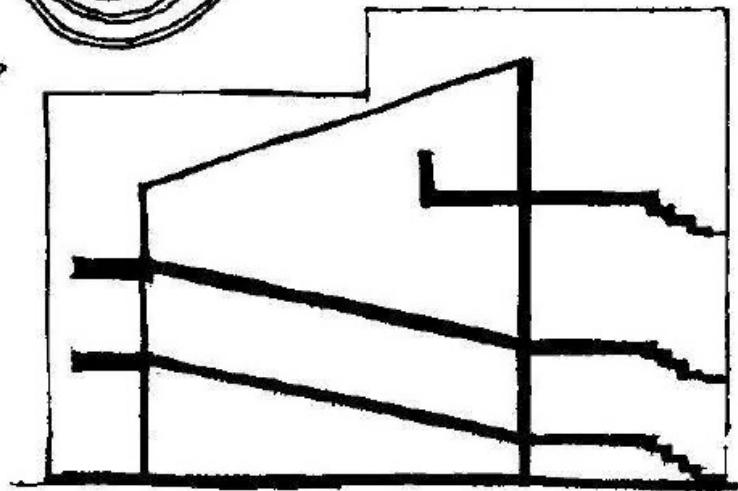


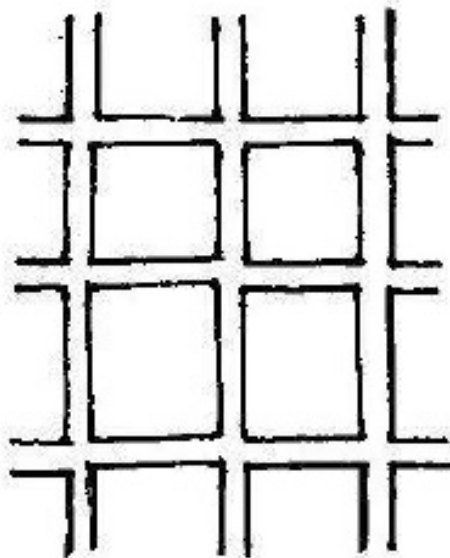
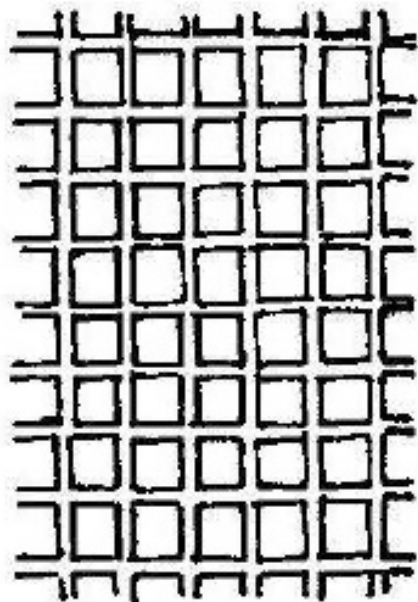


b. **Radial**—A radial configuration has paths extending from, or terminating at, a central, common point.

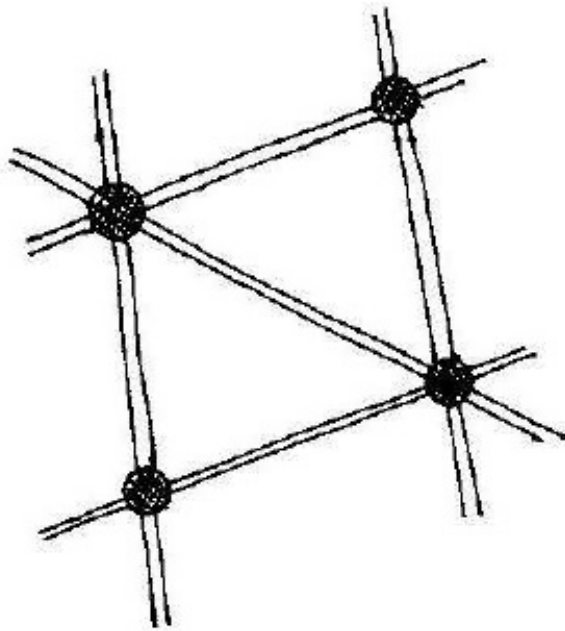


c. **Spiral**—A spiral configuration is a single, continuous path that originates from a Central point, revolves around it, and becomes increasingly distant from it.





- d. **Grid** — A grid configuration consists of two sets of parallel paths that intersect at regular intervals and create square or rectangular fields of space.



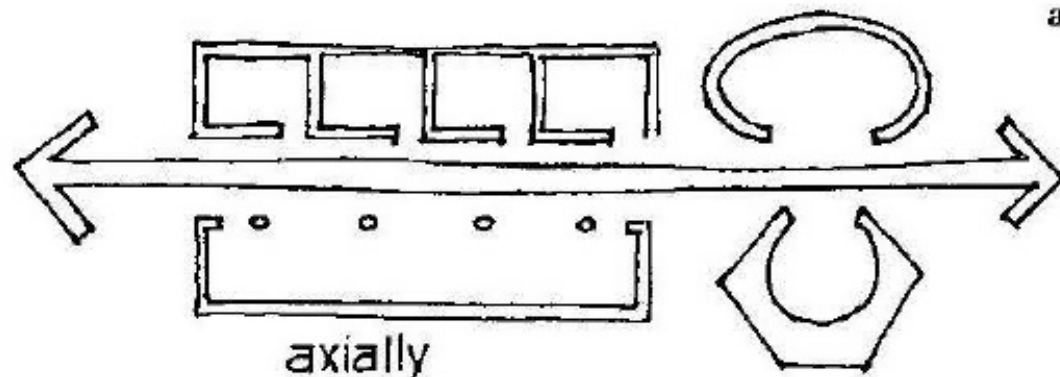
e. **Network**—A network configuration consists of random paths that connect established points in space.

f. **Composite**—A building normally employs a combination of the five patterns above. To avoid the creation of a distorting maze, a hierarchical order among the paths can be achieved by differentiating their scale, form and length.

4. PATH-SPACE RELATIONSHIPS

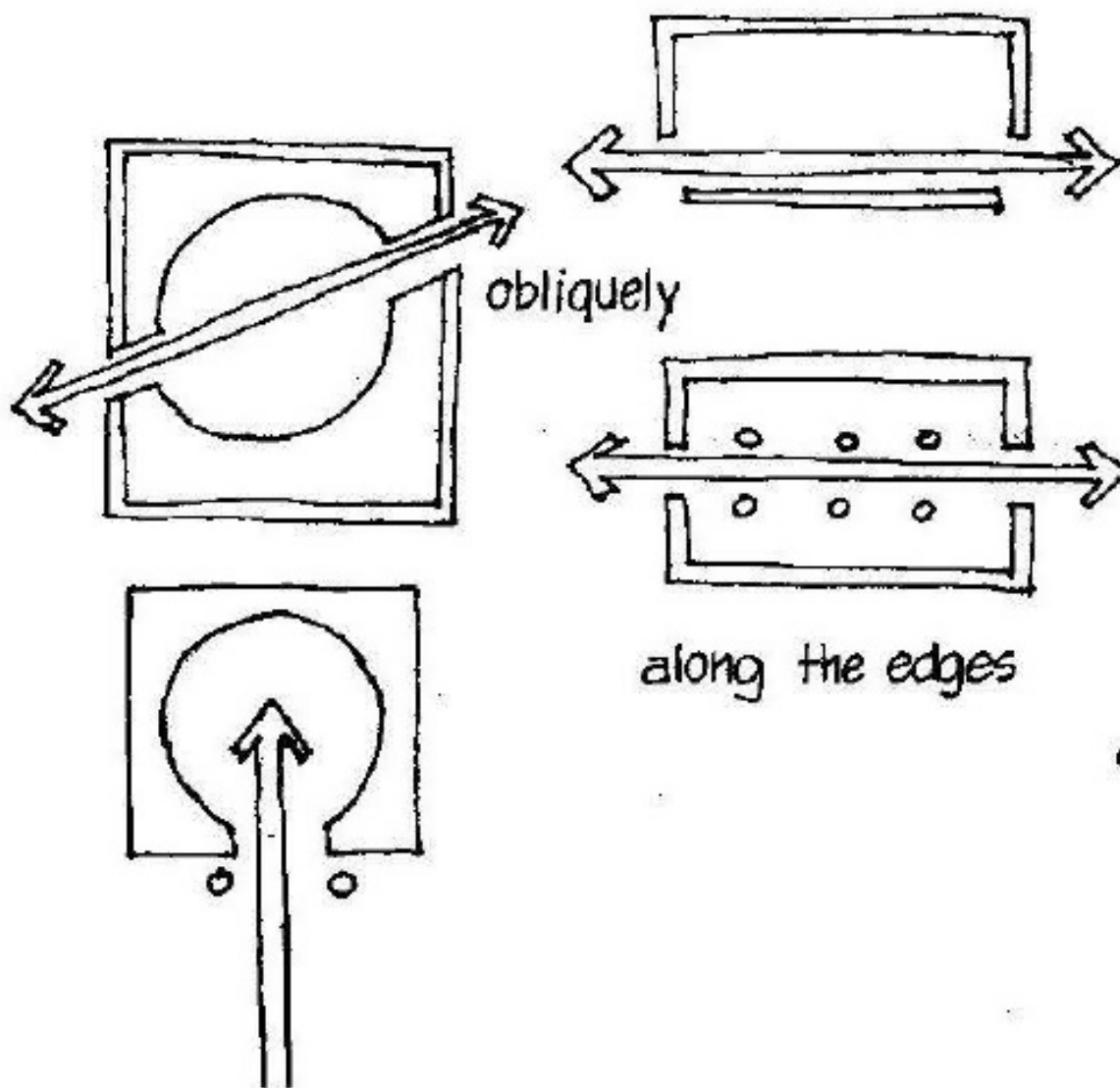
Edges, nodes, & terminations of the Path.

Paths may be related to the spaces they link in the following ways. Paths may:



a. **Pass by Spaces**

- The integrity of each space is maintained.
- The Configuration of the path is flexible.
- Mediating spaces can be used to link the path with the spaces.

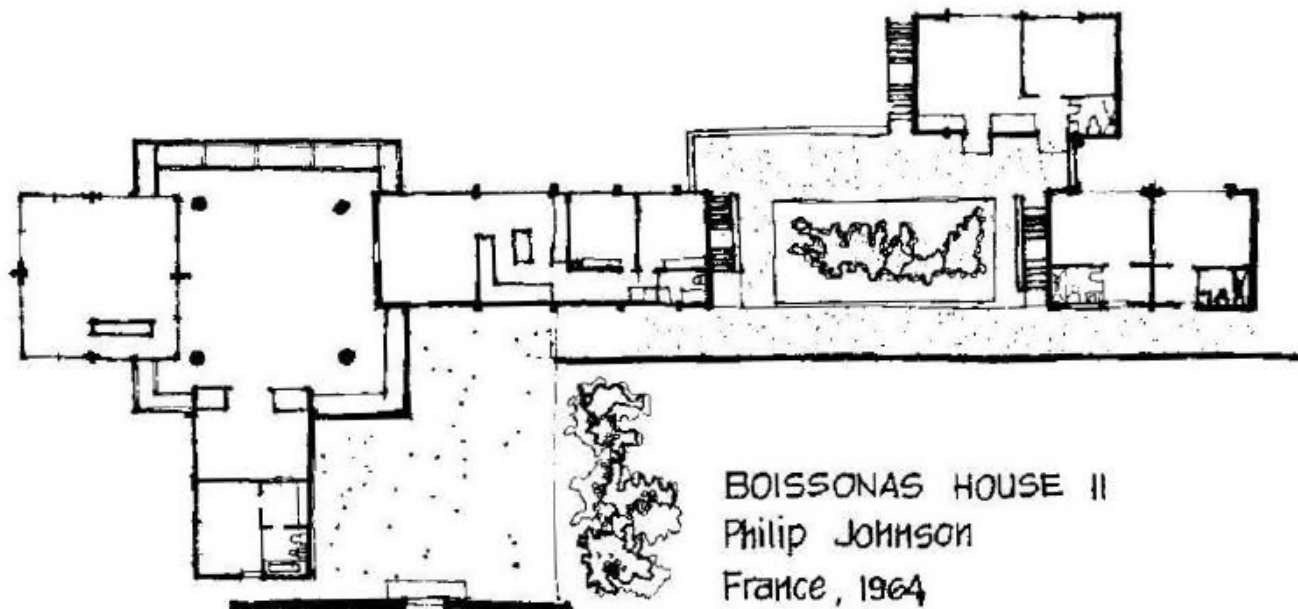


b. Pass through Spaces

- The path may pass through a space.
- Axially, obliquely and or along its edge.
- In cutting through a space, the path creates patterns of rest and movement within it.

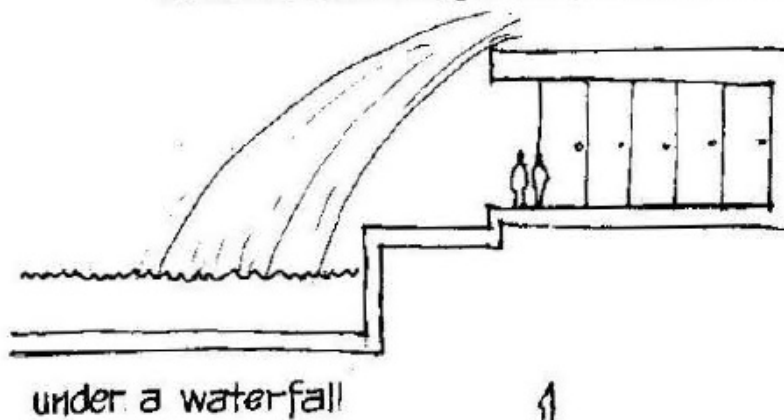
c. Terminate in a Space

- The location of the space establishes the path.
- This path-space relationship is used to approach and enter functionally or symbolically important spaces.

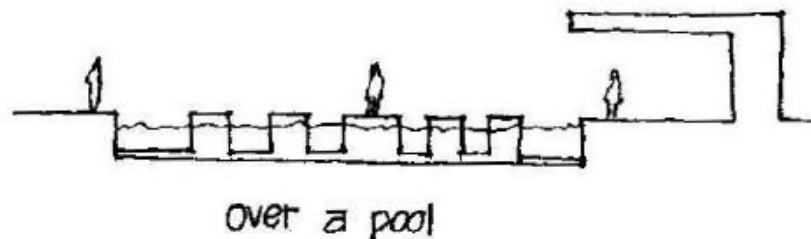


5. FORM OF THE CIRCULATION SPACE

Corridors, Balconies, galleries, stairs & rooms.



Circulation spaces form an integral part of any building organization, and occupy a significant amount of space within the building's volume. If considered merely as functional linking-devices, then circulation paths would be endless, corridor like spaces.



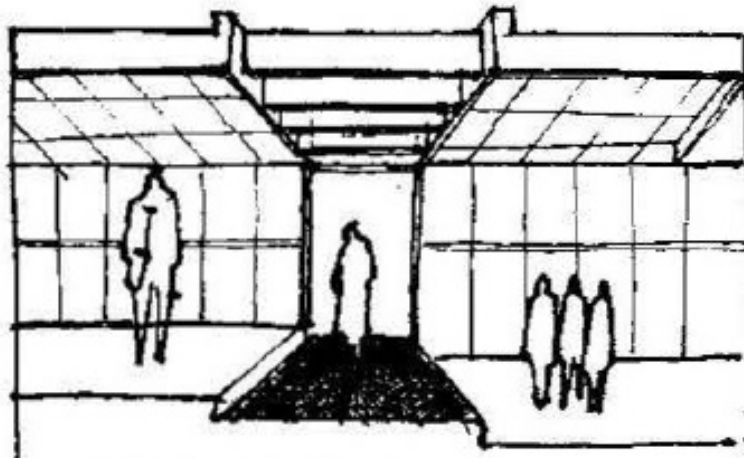
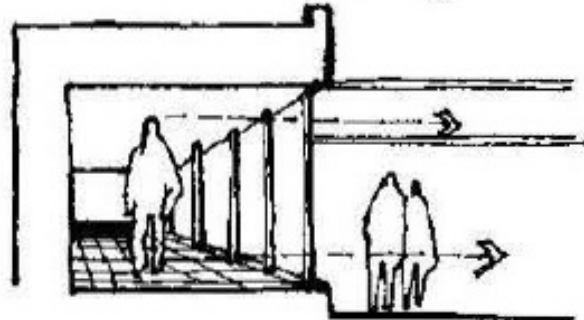
promenade—a suitable place for walking for pleasure, as a mall.

Mall—a public plaza, or system of walks set with trees and designed for pedestrian use.

The form and scale of a circulation space, however, must accommodate the movement of people as they promenade, pause, rest, or take in a view, along its path.

The form of a circulation space can vary according to how:

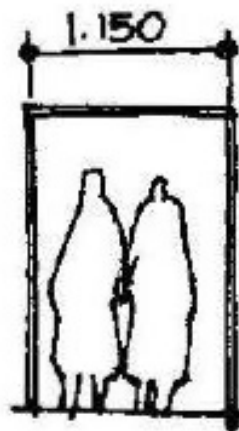
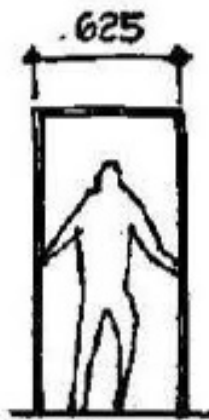
- its boundaries are defined.
- its form relates to the form of the spaces.
- its qualities of scale, proportion, light, and view are articulated.



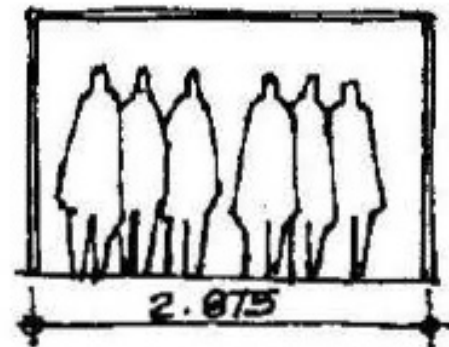
- entrances open onto it;
- it handles changes in level with stairs and ramps.

A CIRCULATION SPACE May Be:

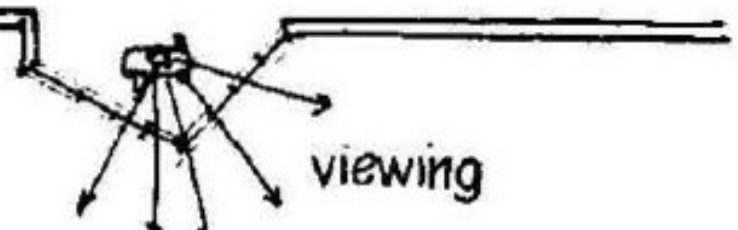
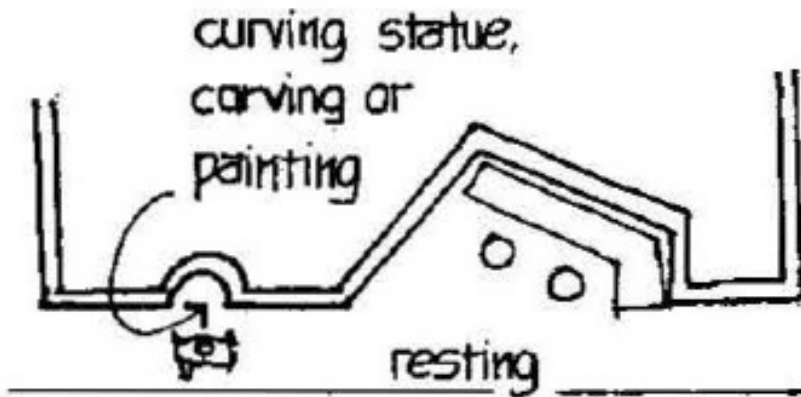
- **Enclosed**, forming a corridor that relates to the spaces it links through entrances in the wall plane;
- **Open on One Side**, to provide visual and spatial continuity with the spaces it links;
- **Open on Both Sides**, to become a physical extension of the space it passes through.



The width and height of a circulation space should be proportionate with the type and amount of traffic it must handle. A narrow, enclosed path will encourage movement.



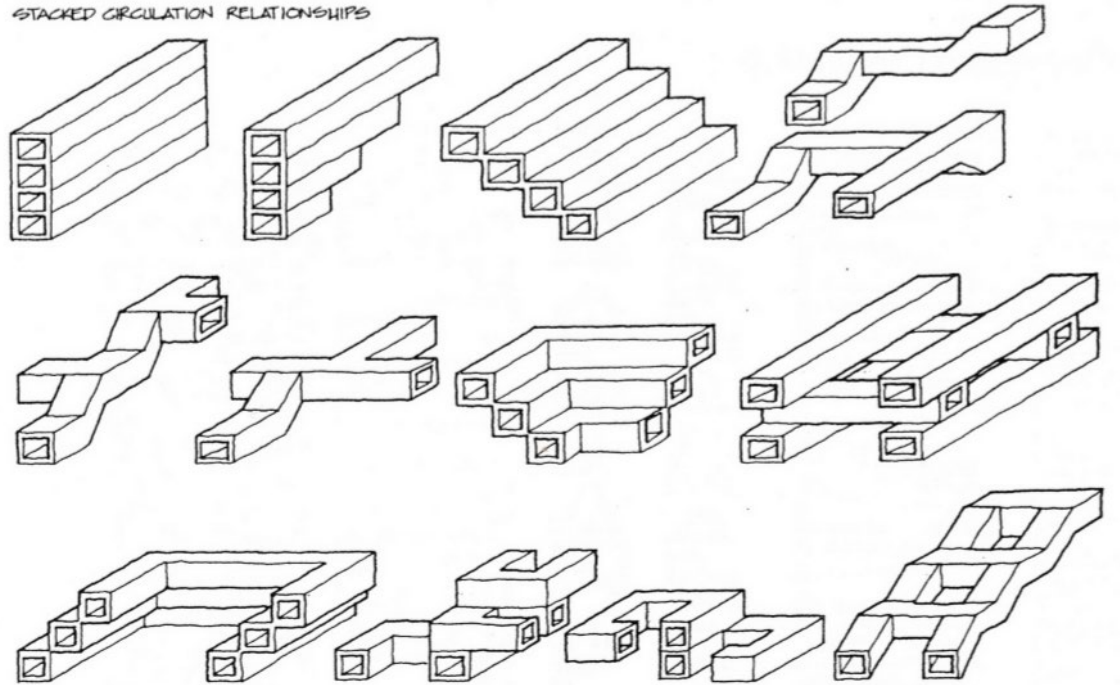
A path can be widened not only to accommodate more traffic but also to create spaces for pausing, resting, or viewing.



Circulation :

□ Line generated form

STACKED CIRCULATION RELATIONSHIPS



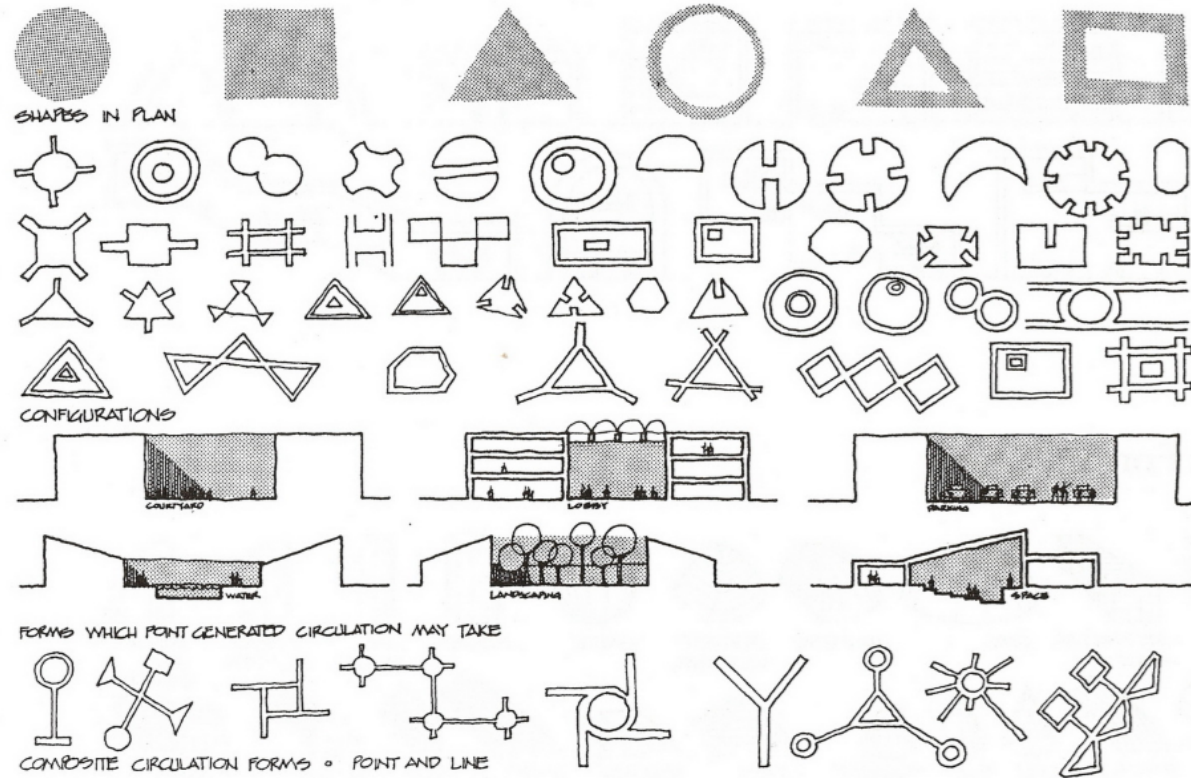
A LINEAR MOVEMENT SPACE MAY TAKE MANY FORMS :



Circulation :

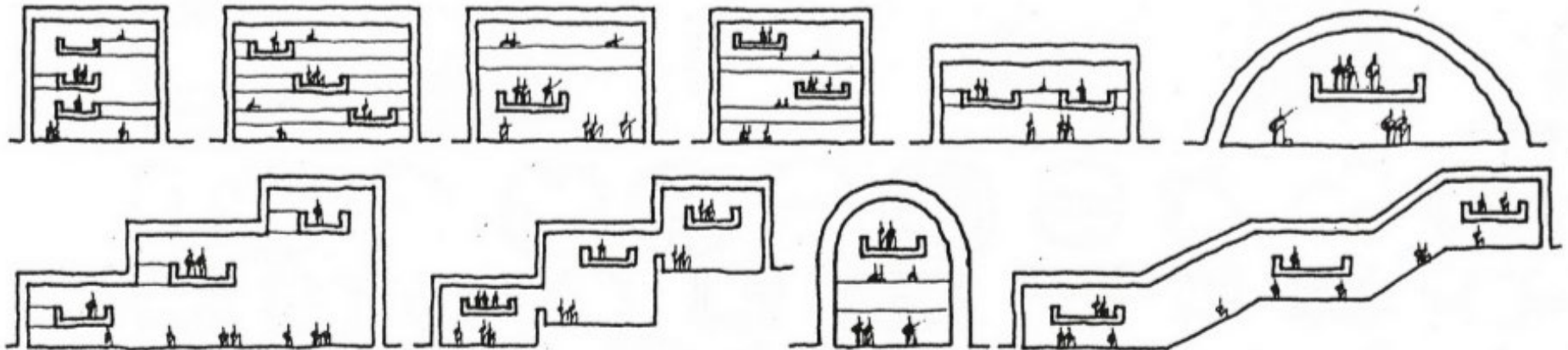
☐ Line generated form

☒ Point generated
circulation

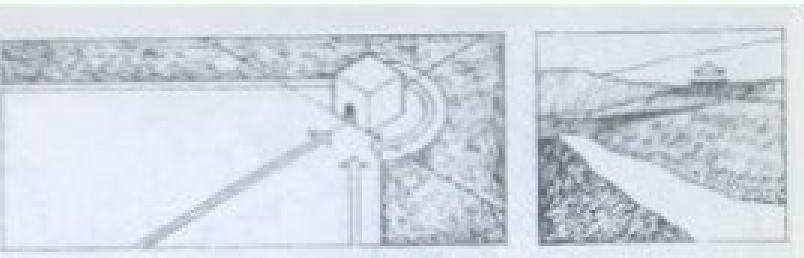


Circulation :

- ☐ Line generated form
- ☐ Point generated circulation
- ☒ Circulation within circulation



CIRCULATION ELEMENTS



THE BUILDING APPROACH

The distance view



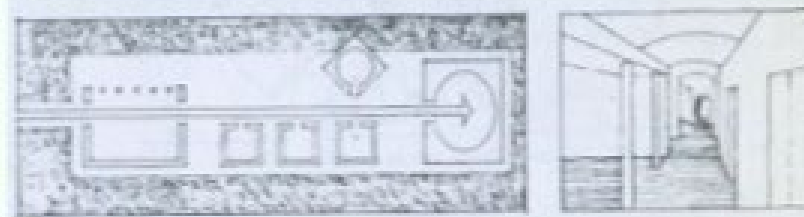
THE BUILDING ENTRANCE

From outside to inside



CONFIGURATION OF PATH

The sequence of space



PATH & SPACE RELATIONSHIP

Edges , nodes and termination of path

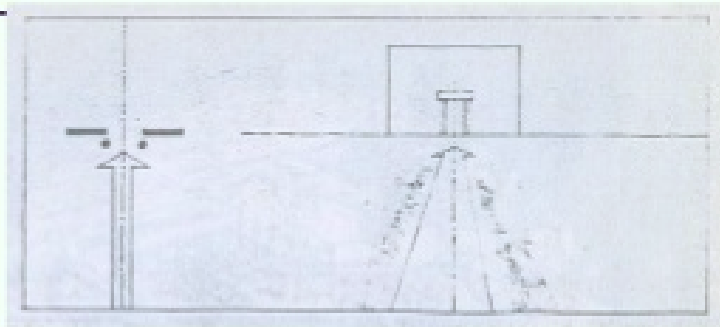


FORM OF THE CIRCULATION SPACE

by Ar. Manish Jain (www.frontdesk.co.in)

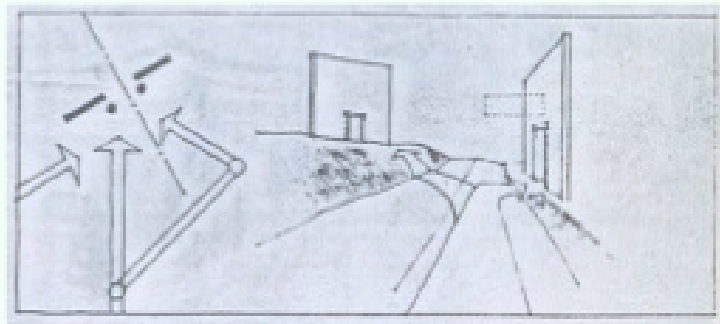
Corridor . Balconies . Galleries . Stairs . Rooms

THE BUILDING APPROACH



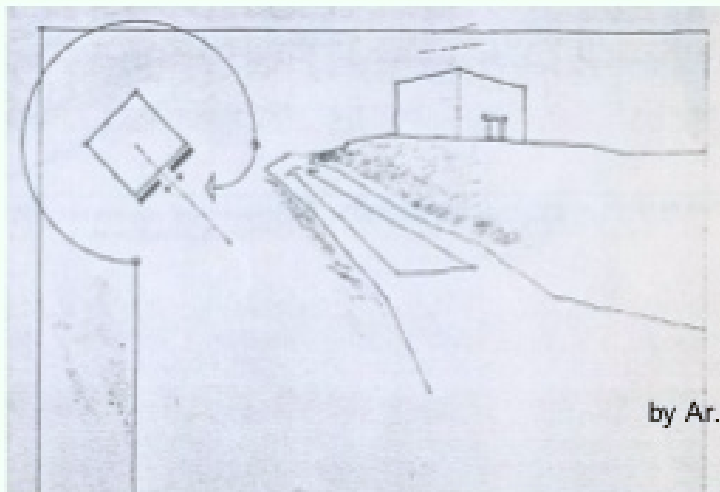
Frontal

- A frontal approach leads directly to building entrance along a straight axial path
- The visual goal that terminates the approach is clear ; it can be entire front facade of a building or an elaborated entrance within it.



Oblique

- Enhance the effect of perspective on a building front façade and form
- Path can be redirected one or more times to delay and prolong the sequence of approach.



Spiral

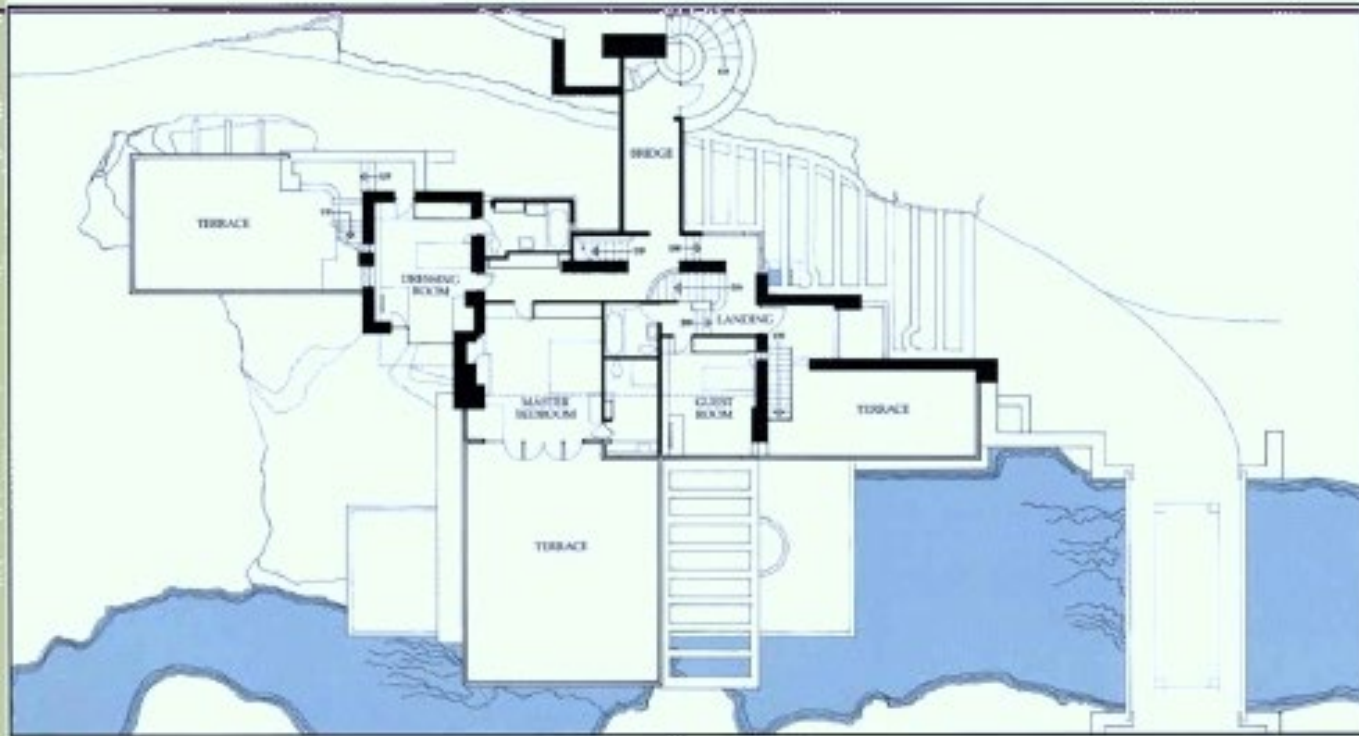
- A Spiral path prolongs the sequence of the approach and emphasizes the three dimensional form of building and it moves around the buildings parameter.
- The buildings entrance might be viewed intermittently during the approach to clarify its position or it can be hidden until the point of arrival.

THE BUILDING APPROACH



Aerial View : THE ACROPOLIS. Athens. Greece

THE BUILDING APPROACH



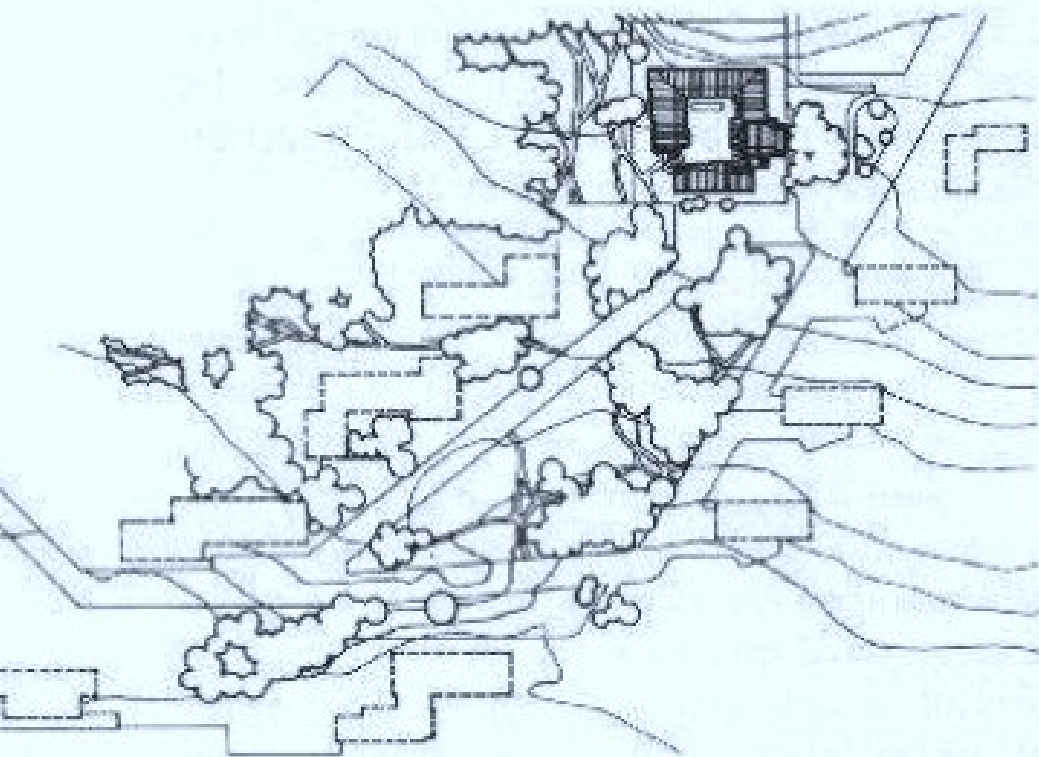
FALLINGWATER

FALLING WATER, Conneisville ,
Pennsylvania , 1939 , F. L. Wright



by Ar. Manish Jain (www.frontdesk.co.in/)

THE BUILDING APPROACH

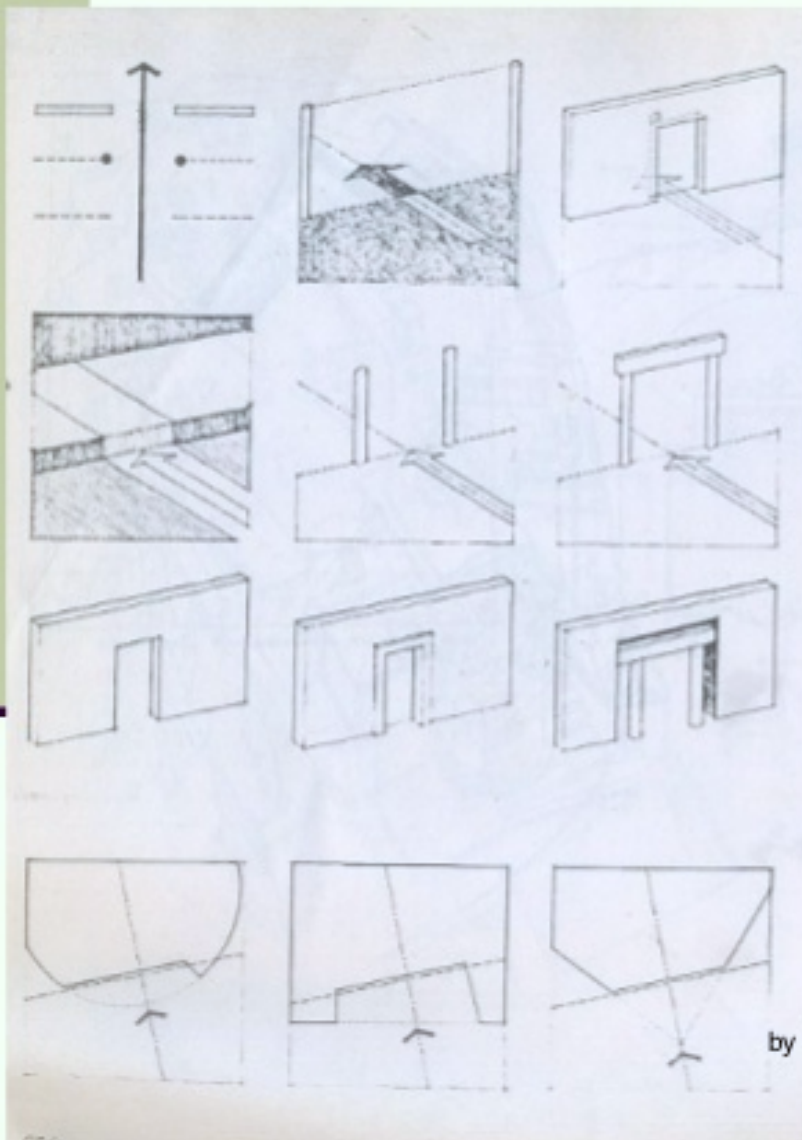


GreatBuildings.com

*Saynatsalo Town Hall · Saynatsalo, Finland
, 1949-52 , Alvar Alto*



BUILDING ENTRANCES



- Entering a building involves the act of penetrating vertical plane that distinguishes one space from another and separates “here” from “there.”

An entrance is signified by establishing a real or implied plane perpendicular to the path of approach.

- Entrances can be flush, projected and recessed.

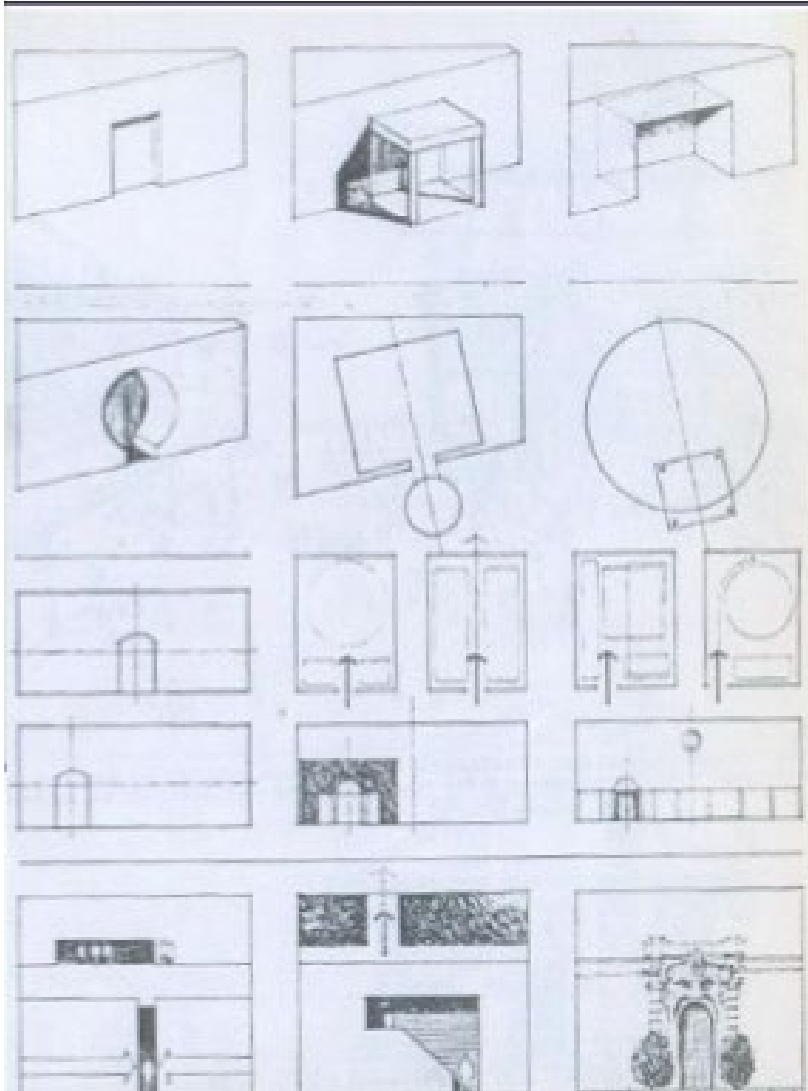
- Flush entrances maintain the continuity of a wall's surface and can be deliberately obscured.

- Projected entrances announce their function to the approach and provide shelter overhead.

- Recessed entrances also provide shelter and receive a portion of exterior space into the realm of the building.

by Ar. Manish Jain (www.manishjain.com)

BUILDING ENTRANCES



✓ An entrance can be centered within the frontal plane of the building or it can be placed off center and create its own symmetrical condition about its opening.

The notion of an entrance can be visually reinforced by

- making the opening lower, wider, or narrower, than anticipated.
- Making the entrance extra deep or circuitous.
- articulating the opening with ornamentation or decorative embellishment.

BUILDING ENTRANCES



Legislative Assembly Building , Chandigarh ,
1961-64 , Le Corbusier

BUILDING ENTRANCES



Piazza san marco venice , italy, View framed by doges palace on the left and scamozzi's library on the right



BUILDING ENTRANCES



Gate to Toshogu Shrine , Tochgi prefecture , Japan



Yomeimon Gate, Toshogu Shrine, Tochgi prefecture , Japan

BUILDING ENTRANCES



Von Sternberg house , Los angeles, california
1936, Richard Neutra.

BUILDING ENTRANCES



Von Sternberg house , Los angeles, california
1936, Richard Neutra.

BUILDING ENTRANCES



House for Mrs. Robert Venturi, Chestnut Hill, Pennsylvania 1962-64, Venturi and Scott Brown.



BUILDING ENTRANCES



John F. Kennedy Memorial Plaza in Dallas, Texas, 1970, Philip Johnson

BUILDING ENTRANCES



Entrance Pylons : Temple of Horus at EDFU,
237-57 B.C.

BUILDING ENTRANCES



Pazzi chapel by Filippo Brunelleschi 1429-46 , Florence , Italy

BUILDING ENTRANCES



Façade of Sant' Andrea, Mantua by Leon Battista Alberti

by Ar. Manish Jain (www.frontdesk.co.in)



The church of Sant'Andrea al Quirinale by G.L. Bernini, in 1658-1671

BUILDING ENTRANCES



Millowner association building, Ahmedabad
, 1954 . Le corbusier

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CONFIGURATION OF THE PATH

LINEAR

ALL paths are linear , A Straight path , however can be primary organizing element for a series of spaces.

RADIAL

Path extending from , or terminating at central common point.

SPIRAL

Is a single continuous path that originates from a central point revolves around it.

GRID

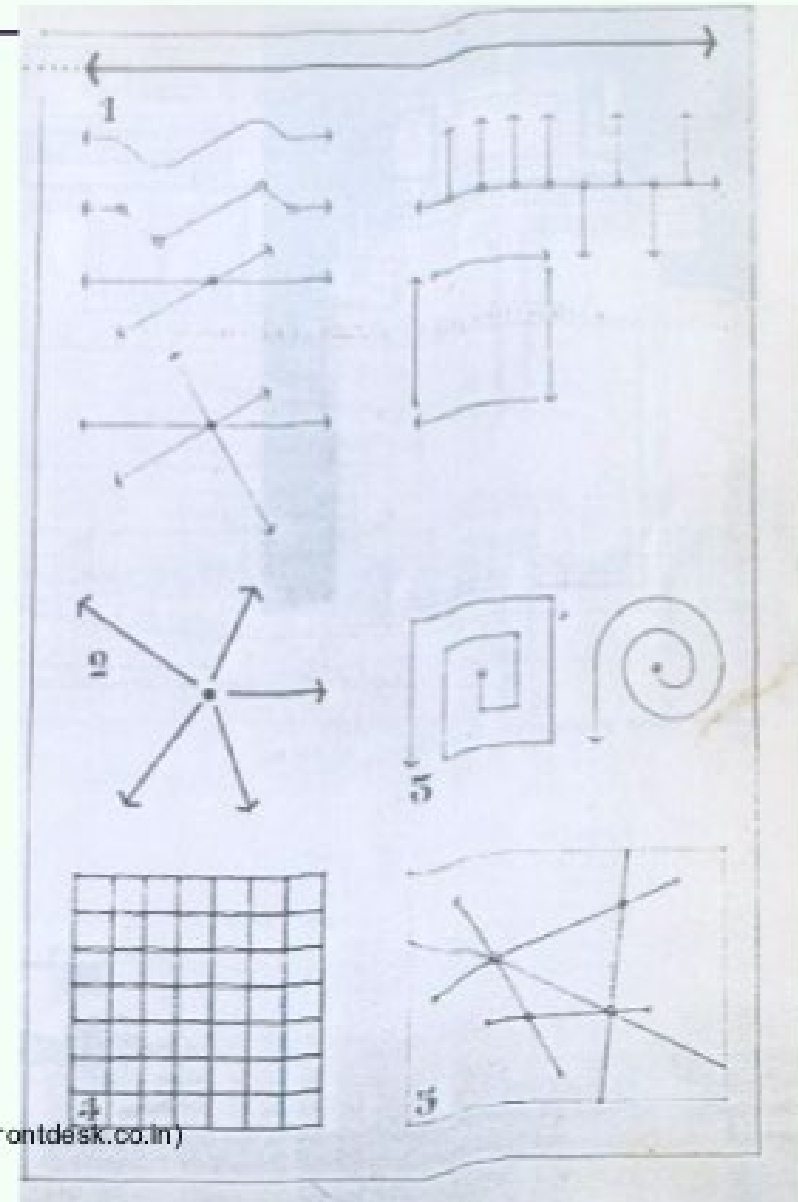
Consist of two set of parallel paths that intersect at regular intervals

NETWORK

Consist of random path that connect established point in space

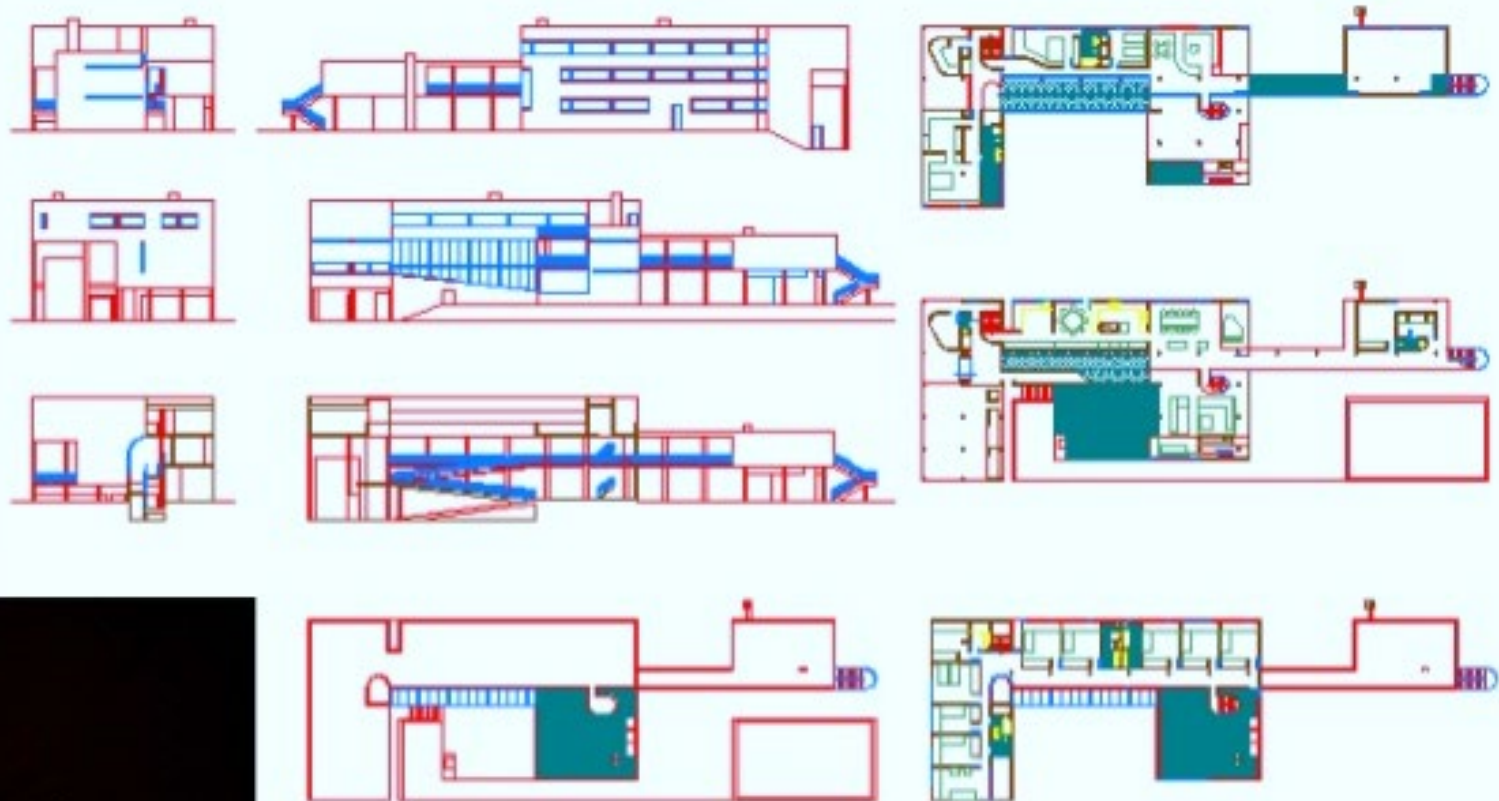
COMPOSITE

Employs combination of the preceding forms



CONFIGURATION OF THE PATH

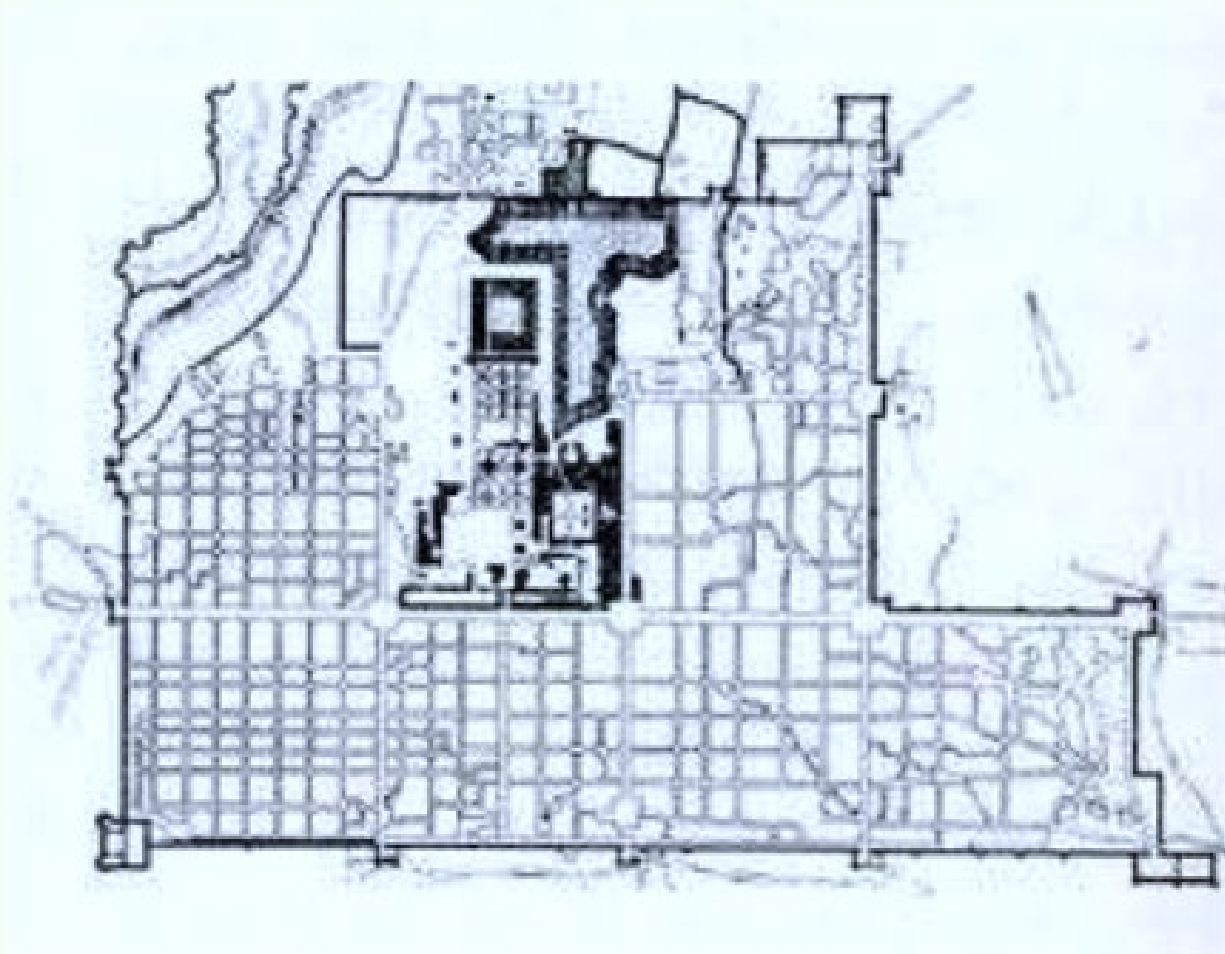
LINEAR PATH



Weinstein House, Old Westbury - Nassau County, Long Island, NY, USA 1969-71 by: Richard Meier

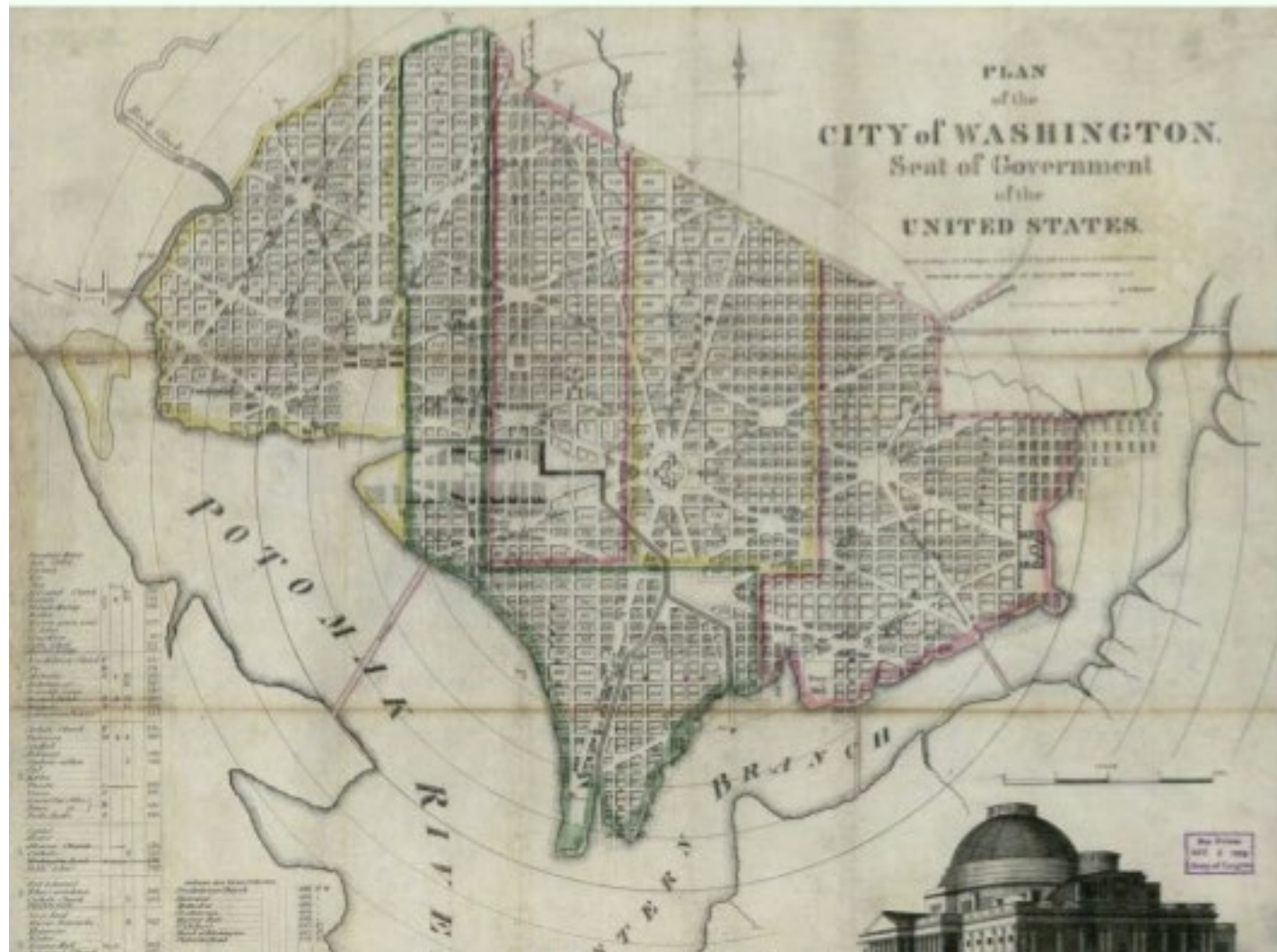
CONFIGURATION OF THE PATH

GRID PATH

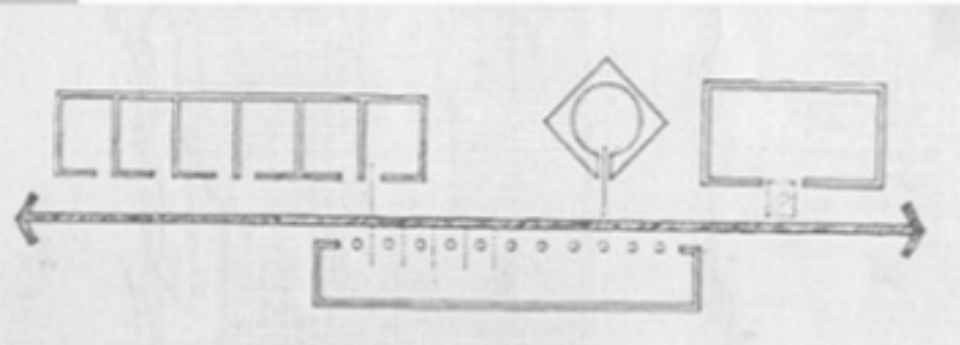


CONFIGURATION OF THE PATH

NETWORK PATH

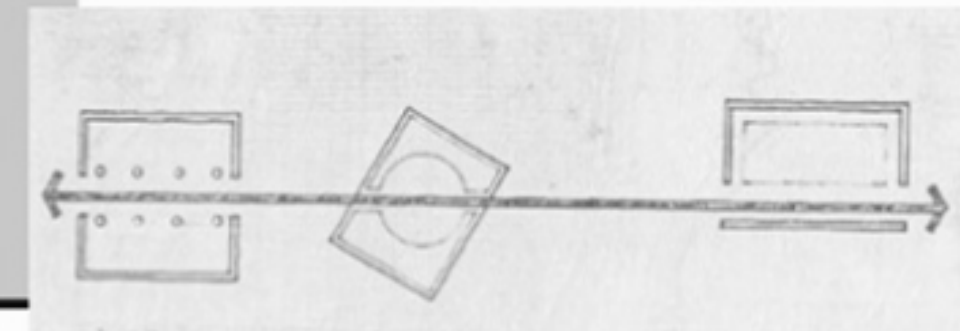


PATH . SPACE RELATIONSHIP



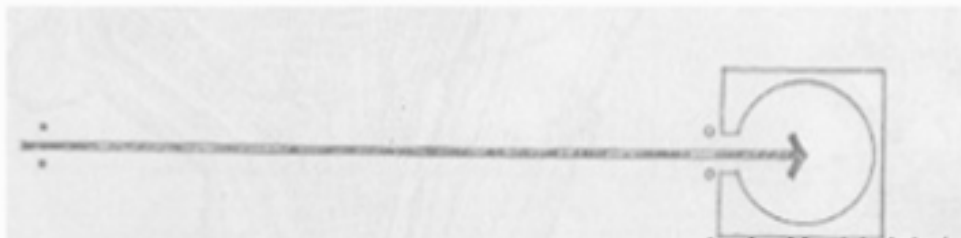
PASS BY SPACES

- The integrity of each space is maintained
- The configuration of path is flexible
- Mediating space can be used to link the path with spaces



PASS THROUGH SPACES

- The path may pass through a space axially, obliquely or along its edge



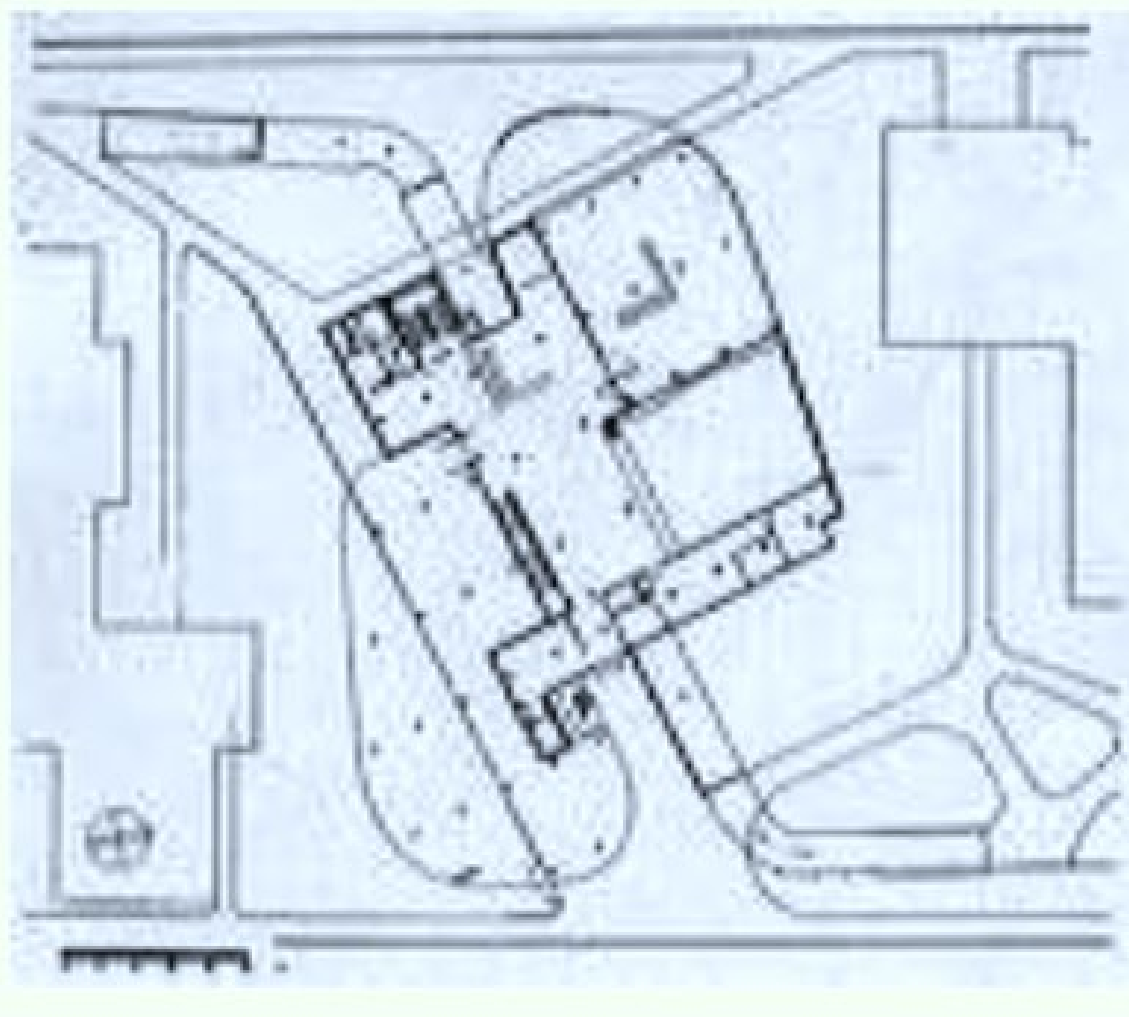
TERMINATE IN SPACE

- The location of space establishes the path
- This path –space relationship is used to approach and enter functionally or

CONFIGURATION OF THE PATH

LINEAR PATH

PASS THROUGH SPACES



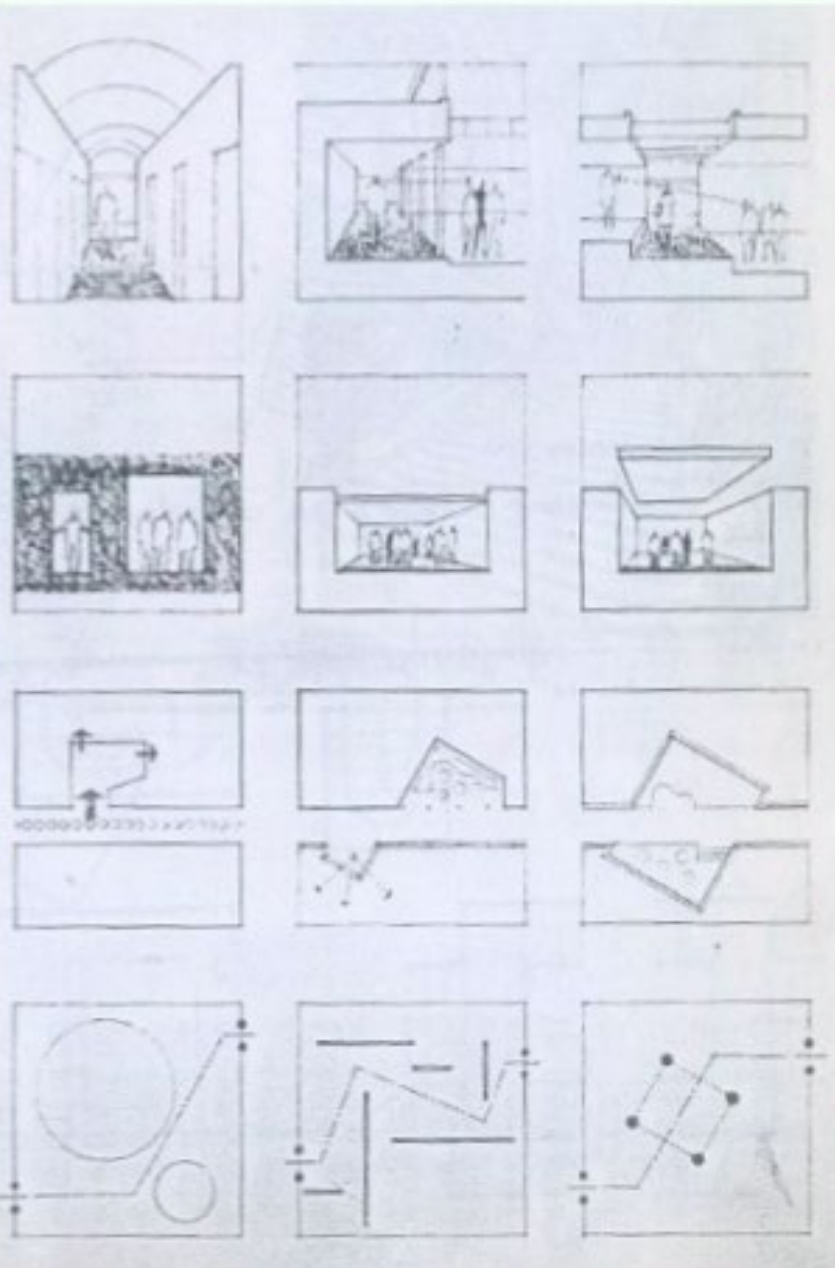
CONFIGURATION OF THE PATH

LINEAR PATH

PASS BY SPACES



FORM OF CIRCULATION SPACE



ENCLOSED

- Forming a corridor that related to the spaces it links through entrance in wall planes

OPEN ON ONE SIDE

- To provide visual and spatial continuity with space it links

OPEN ON BOTH SIDE

- to become a physical extension of space it passes through