ARCHITECTURE DESIGN THEORY

PART 3: **FORM & SPACE**

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ARCHITECTURE DESIGN THEORY

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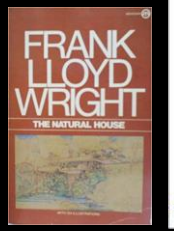
SOURCES

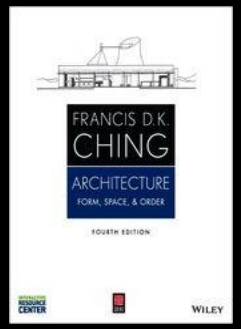
* Personal Architecture projects, frequent international travel, BS Architectural Engineering (U.Texas 84), plus 1-1/2 years of Urban Design (UCSD 1986-87)

COURSE TEXTBOOKS

[1] Ching, Francis D.K. ***Architecture: Form, Space, and Order.*** 4 ed., Wiley, 2014.

[2] Wright, Frank Lloyd. ***The Natural House.*** Bramhall House; 1954.





OTHER SOURCES

[3] Storrer, William A. ***The Architecture of Frank Lloyd Wright, Complete Catalog.*** 4TH ed. U. of Chicago Press, 2017.

[4] Bacon, Edmond. ***Design of Cities.*** Thames & Hudson Ltd, 1978.

[5] Lynch, Kevin. ***The Image of The City.*** MIT Press, 1960.

[6] Wright, Frank Lloyd. ***Testament.*** New York, Bramhall House, 1957.

[7] Froebel; ***Brief History of the Kindergarten.*** Froebel Gifts, 2013.
http://www.froebelgifts.com/history.htm

[8] ***PENN Rare Book and Manuscript: Frank Lloyd Wright's Paternal Family.*** Penn Library. University of Pennsylvania, Feb. 20, 2014.
http://www.library.upenn.edu/rbm/featured/mscoll822.html

[9] Huxtable, Ada Louise. ***Frank Lloyd Wright.*** New York Times, Oct. 31, 2004.
https://www.nytimes.com/2004/10/31/books/chapters/frank-lloyd-wright.html

[10] Burns, Ken, and Novick, Lynn. ***Frank Lloyd Wright: A Film by Ken Burns and Lynn Novick DVD.*** PBS Home Video, August 28, 2001.

[11] Wright, Frank Lloyd. ***The Art and Craft of the Machine,*** Vol. 8, No. 2 pp. 77-81, 83-85, 87-90, May, 1901.
https://www.jstor.org/stable/pdf/25505640.pdf

[12] Wright, Frank Lloyd. ***In the Cause of Architecture.*** Architectural Record, vol. XXIII, March 1908.

[13] Wright, Frank Lloyd. ***In the Cause of Architecture; Second Paper.*** Architectural Record, May 1914.

FORM & SPACE

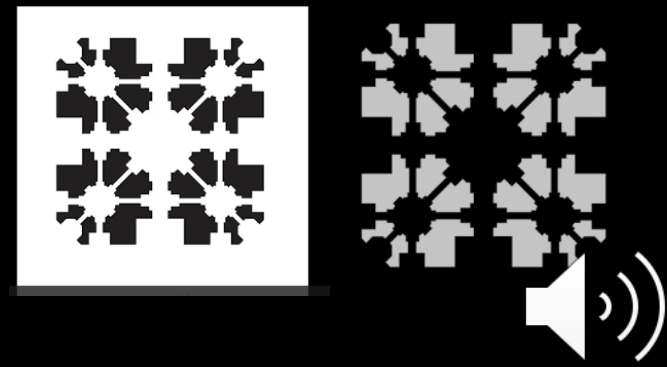
“We organize into positive shapes, and negative background

…as they grow, elements around them compete

… figures and background form an inseparable reality, ***A UNITY OF OPPOSITES****, like how FORM and SPACE form architecture*

…as space captured, enclosed, molded, and organized by mass, ***architecture emerges***

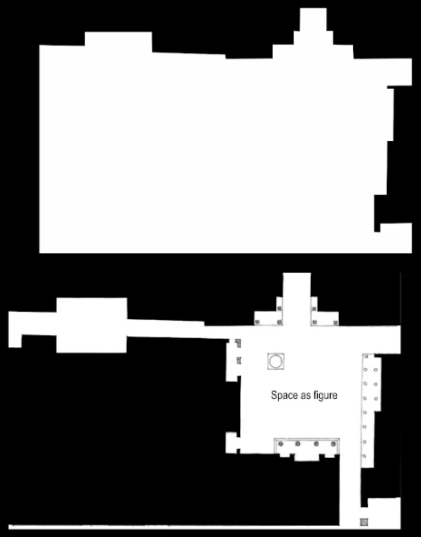
…form occurs at junction between mass and space. See the MASS containing a volume of space as well as the form of the VOLUME itself” [1]



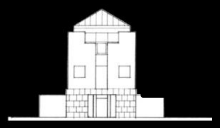
FORM & SPACE

“Relationship of mass and space at several scales … see not only form, but it's impact on space

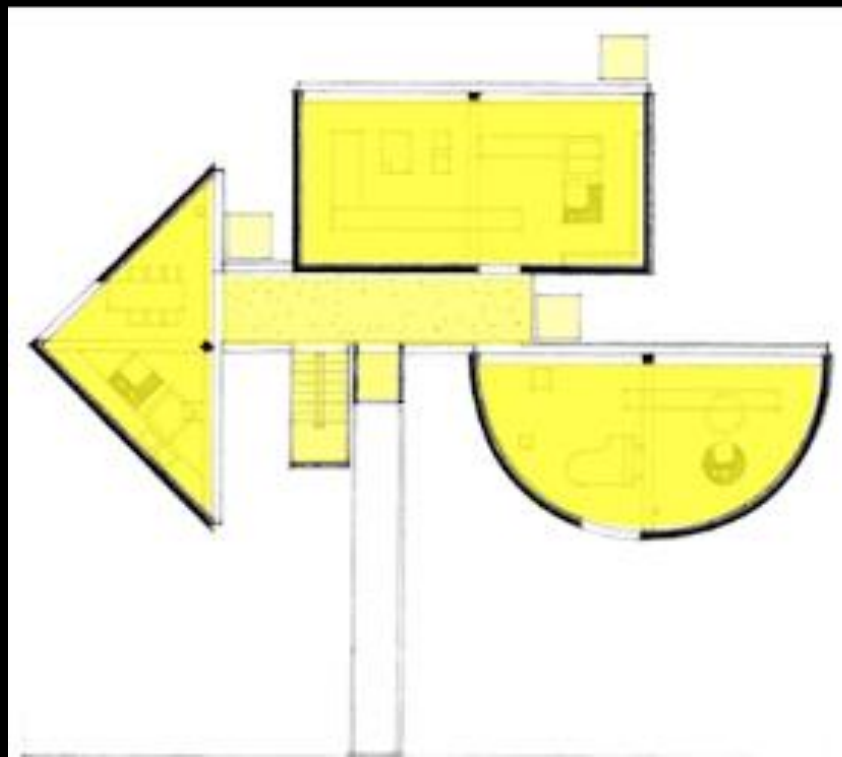
… at an URBAN SCALE, a building is part of a FABRIC defining streets and squares



… or can stand alone

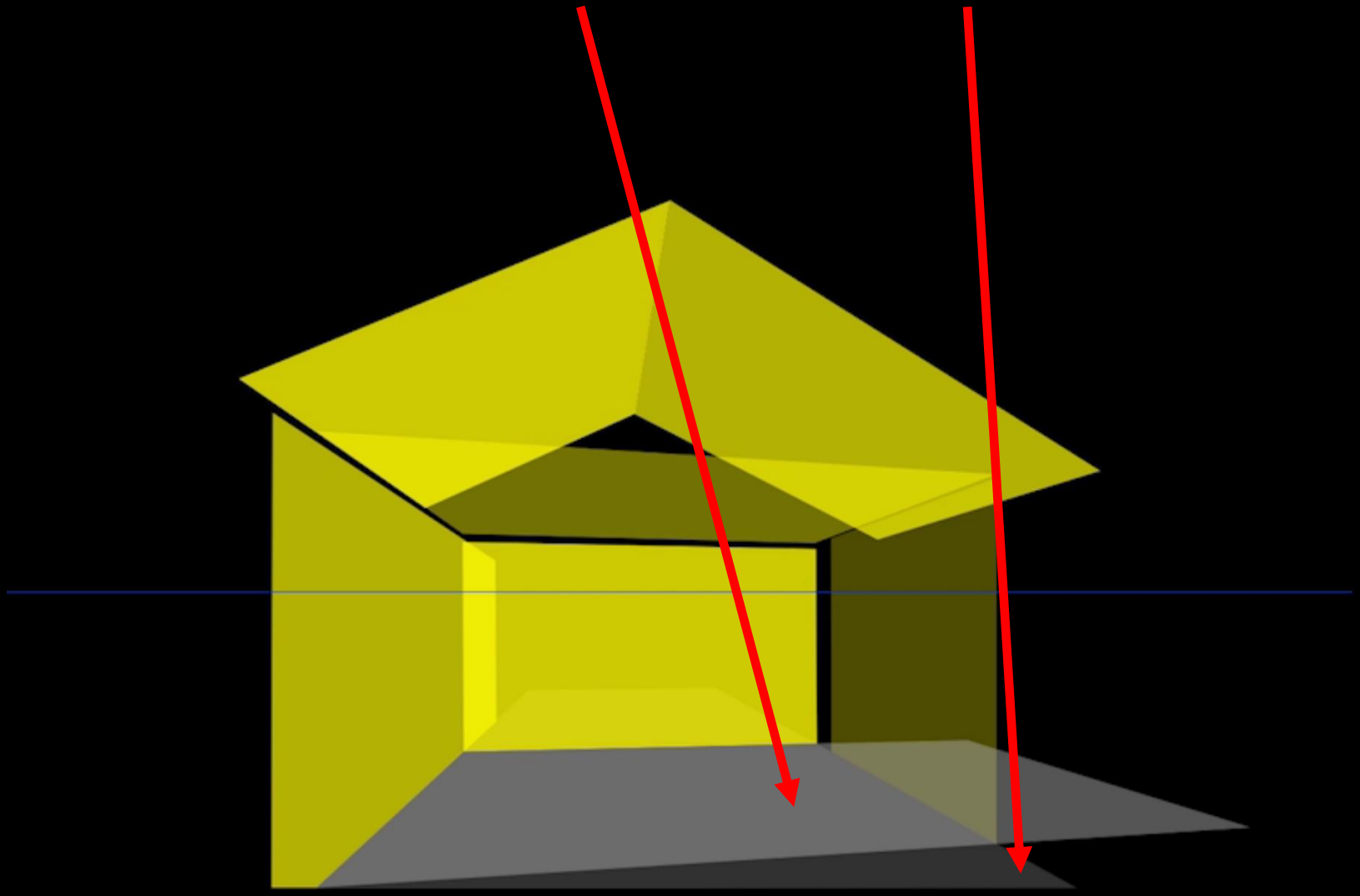


…we Read walls as elements. The space in-between should not be simply background for walls, but also forms” [1]



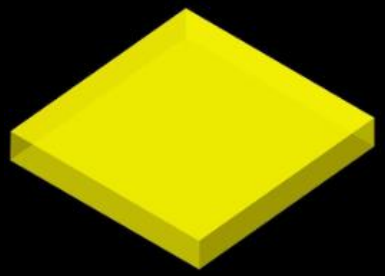
BASE PLANE

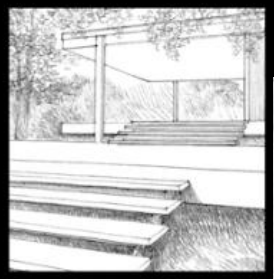
*"can be either the **GROUND PLANE** or the **FLOOR PLANE**"* [1]

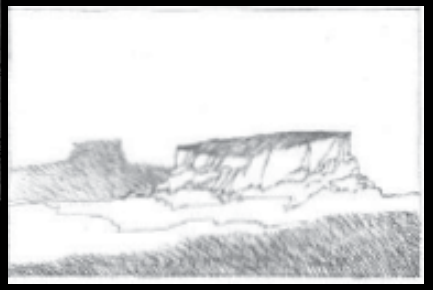


Elevated or sunken planes

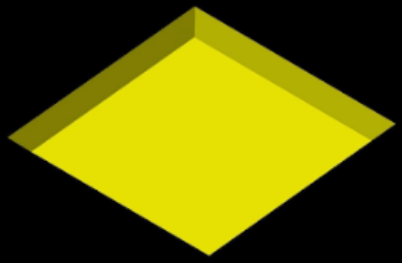
"Elevated plane separates from surroundings and creates a domain within a larger spatial context. It's vertical edges help define it

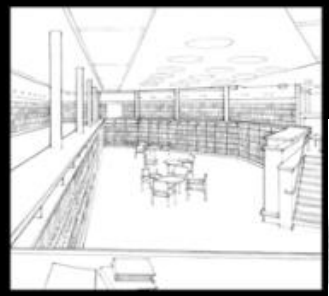


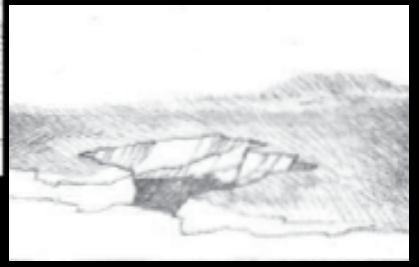




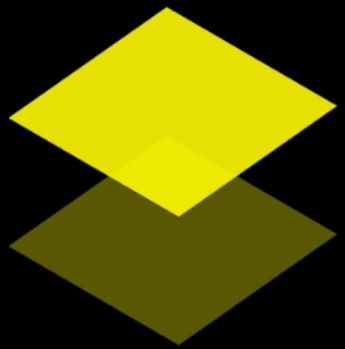
... a sunken plane defines a volume of space isolated from a larger context. . It's vertical edges help define it

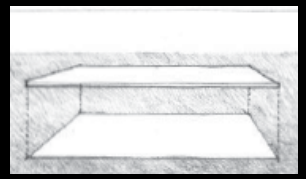






...a plane overhead defines a volume of space beneath it" [1]



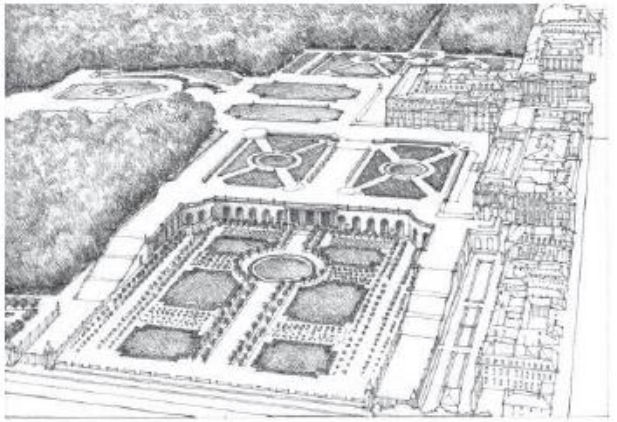


SITE DESIGN

The surface articulation of the ground or floor plane is often used in architecture to define a zone of space within a larger context:

path of movement.

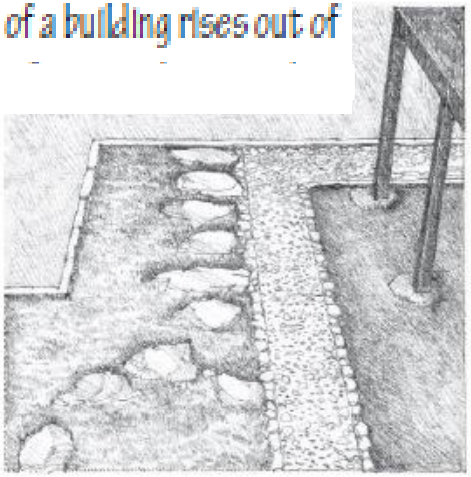
Street in Woodstock, Oxfordshire, England



places of rest,

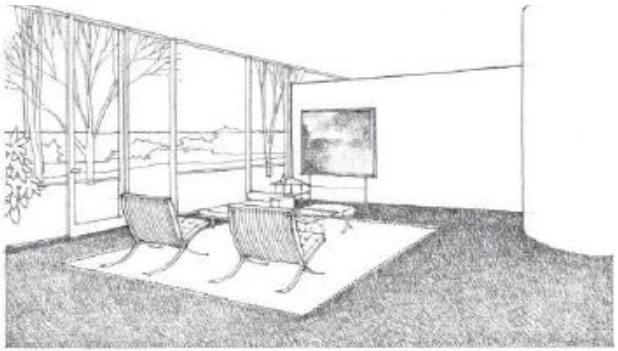
Parterre de Broderie, Palace of Versailles, France, 17th century, André Le Nôtre

field from which the form of a building rises out of the ground



Katsura Imperial Villa, Kyoto, Japan, 17th century

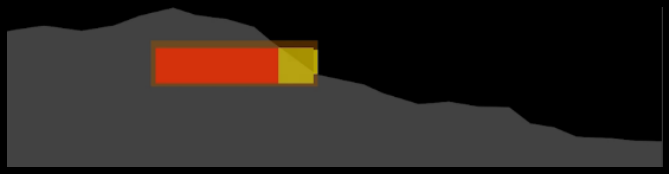
articulate a functional zone within a one-room living environment.



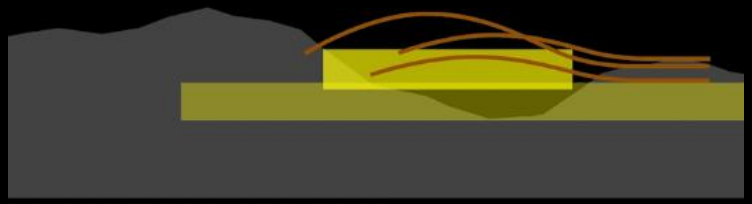
Interior of **Glass House**, New Canaan, Connecticut, 1949, Philip Johnson

SITE DESIGN

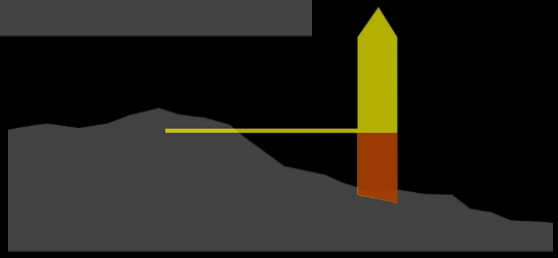
"The form of the building can be embedded into the earth



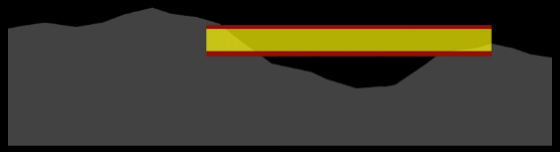
Reform topography of a site



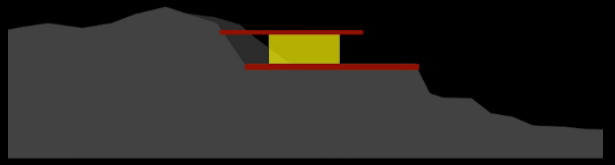
Stand as a tower and mark a position in space



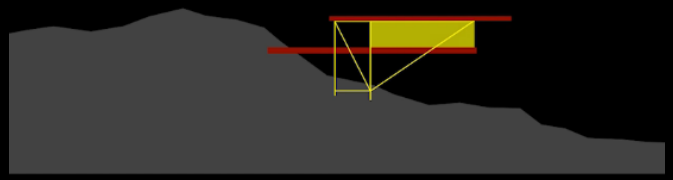
Bridge span of depression



Serve as a terrace and expand the ground plane



Extend out like a peer in space



Or stand free like a pavilion in a meadow" [1]

GROUND PLANE

"penetrated to buffer against undesirable conditions, or for energy efficiency" [1]

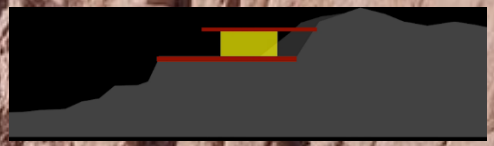
SITE DESIGN

GROUND PLANE *“elevated to establish a podium”* [1]

Machu Picchu at 8000 feet, Andes mountains Peru, 1500 AD

SITE DESIGN

GROUND PLANE *“cut into, to honor a sacred or significant place”* [1]



Mortuary temple of Queen Hatshepsut, Thebes 1511AD

SITE DESIGN

*"**GROUND PLANE** terraced"* [1]

Steep Lyon Street in San Francisco; Building project

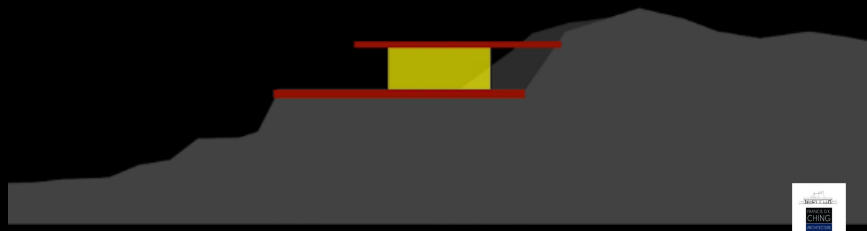
(on Carpentry crew while in Grad School) and Residence (rental), 1988/89

SITE DESIGN

San Francisco; Building project, and Residence, 1988/89

SITE DESIGN

*“ **GROUND PLANE** terraced”* [1]



Steep Lyon Street in San Francisco; Building project and Residence (rental), 1988/89

SITE DESIGN

GROUND PLANE *"stepped to allow changes in elevation easily traversed"* [1]

Spanish Steps, Rome Italy, 1725 AD

GROUND PLANE *“ bermed to define outdoor spaces”* [1]

Puakua Golf Course, Hawaii
https://www.puakeagolf.com/

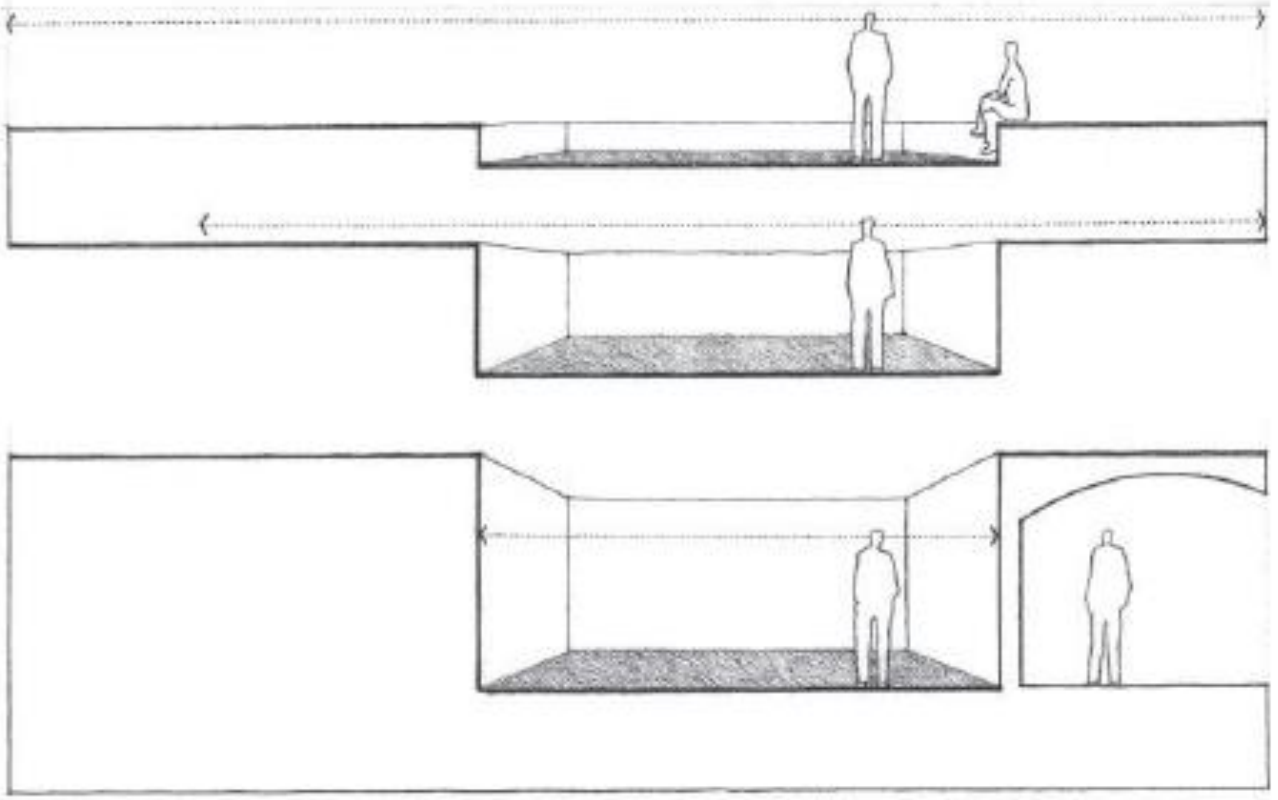
FLOOR PLANE

"...can be rendered as a neutral ground against which other elements in space are seen as figures" [1]

Bacardi Office Building by Meis van der Rohe, Santiago de Cuba 1958

FLOOR PLANE sunken

- The depressed field can be an interruption of the ground or floor plane and remain an integral part of the surrounding space.
- Increasing the depth of the depressed field weakens its visual relationship with the surrounding space and strengthens its definition as a distinct volume of space.
- Once the original base plane is above our eye level, the depressed field becomes a separate and distinct room in itself.

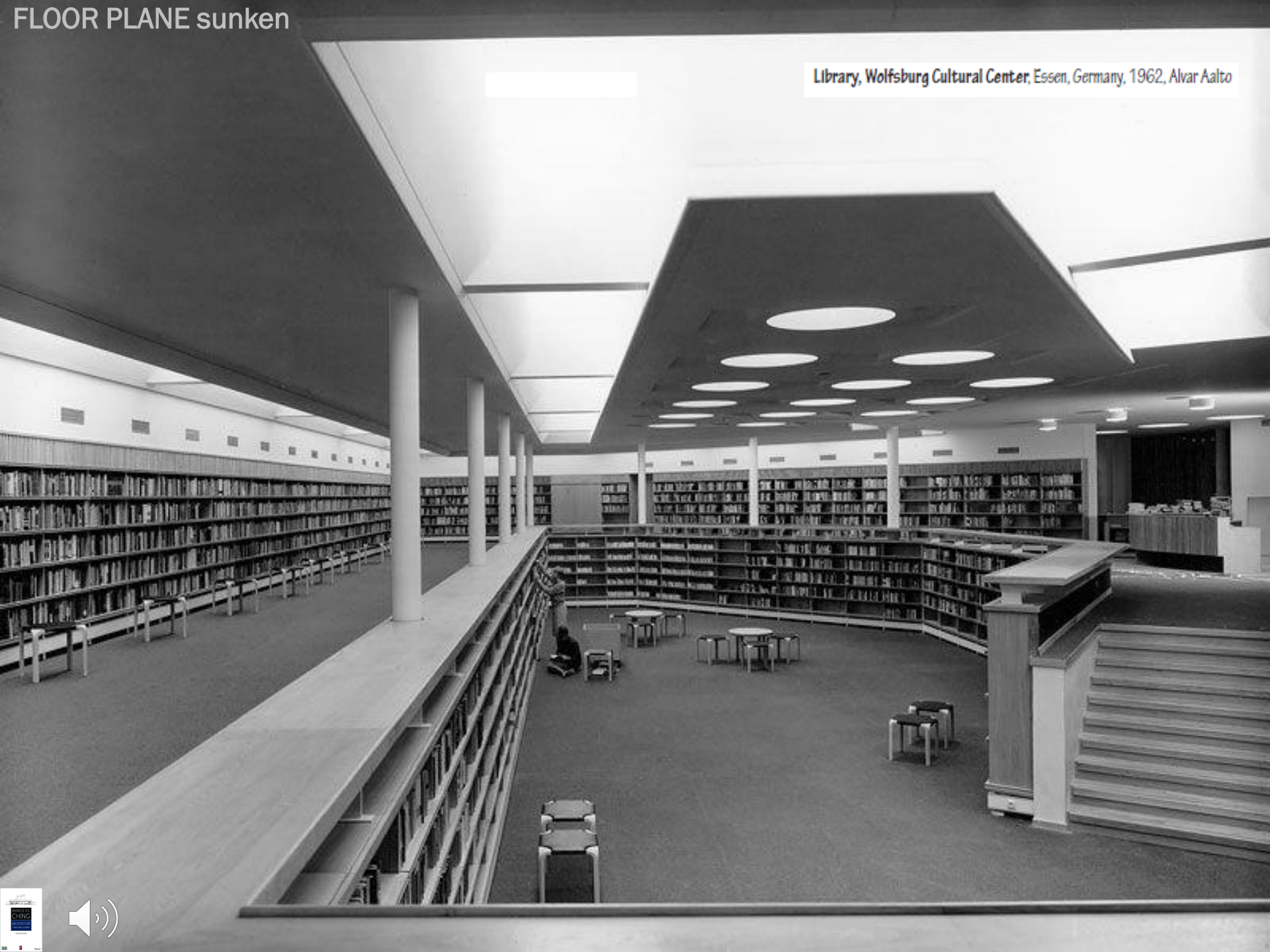


FLOOR PLANE sunken

“ … can be stepped or terraced to break scale of space down to human dimensions and create platforms for sitting, viewing, or performing” [1]

Sitting area of Lawrence House in Sea Ranch California, 1966

FLOOR PLANE sunken

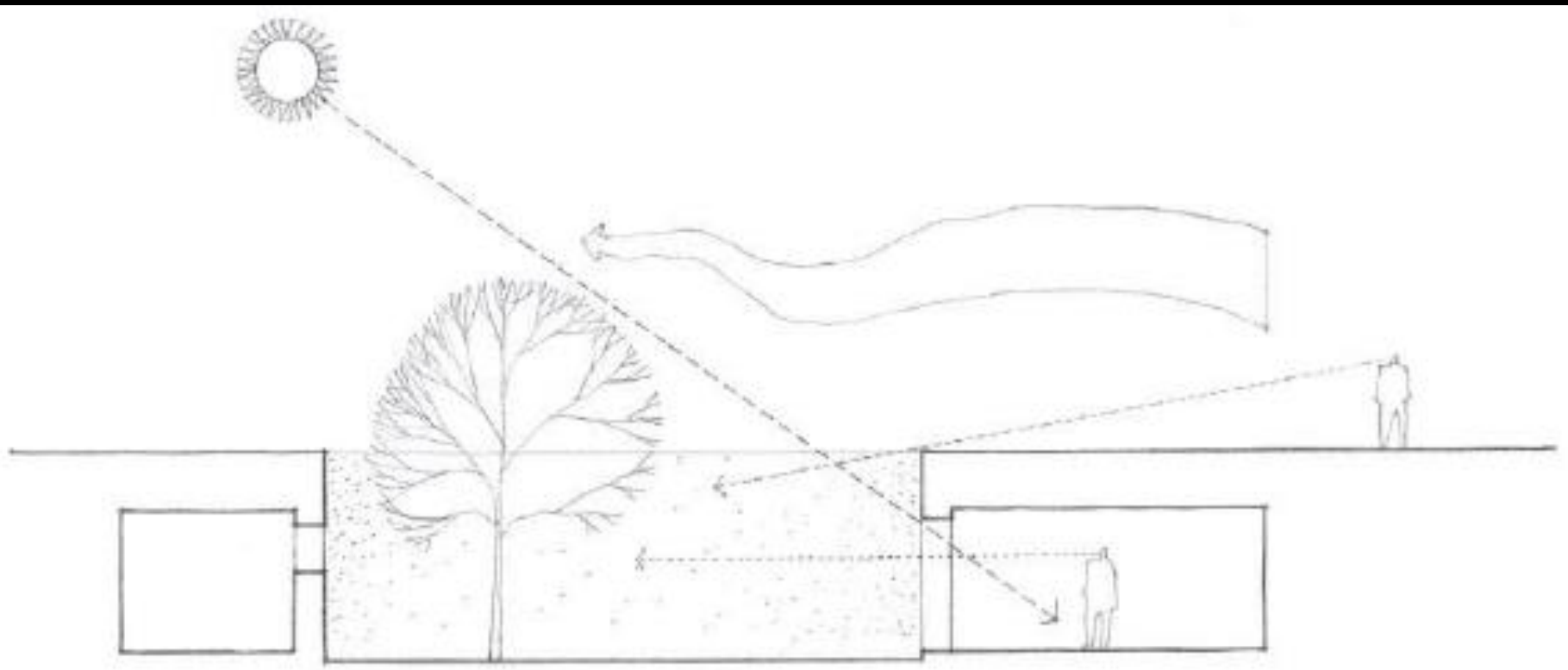


Library, Wolfsburg Cultural Center, Essen, Germany, 1962, Alvar Aalto

FLOOR PLANE sunken

https://donpedrobrooklyn.com/sunken-living-room/

FLOOR PLANE sunken



The ground plane can be lowered to define sheltered outdoor spaces for underground buildings. A sunken courtyard, while protected from surface-level wind and noise by the mass surrounding it, remains a source of air, light, and views for the underground spaces opening onto it.

GROUND PLANE
sunken

Depressed areas in the topography of a site can serve as stages for outdoor arenas and amphitheaters. The natural change in level benefits both the sightlines and the acoustical quality of these spaces.

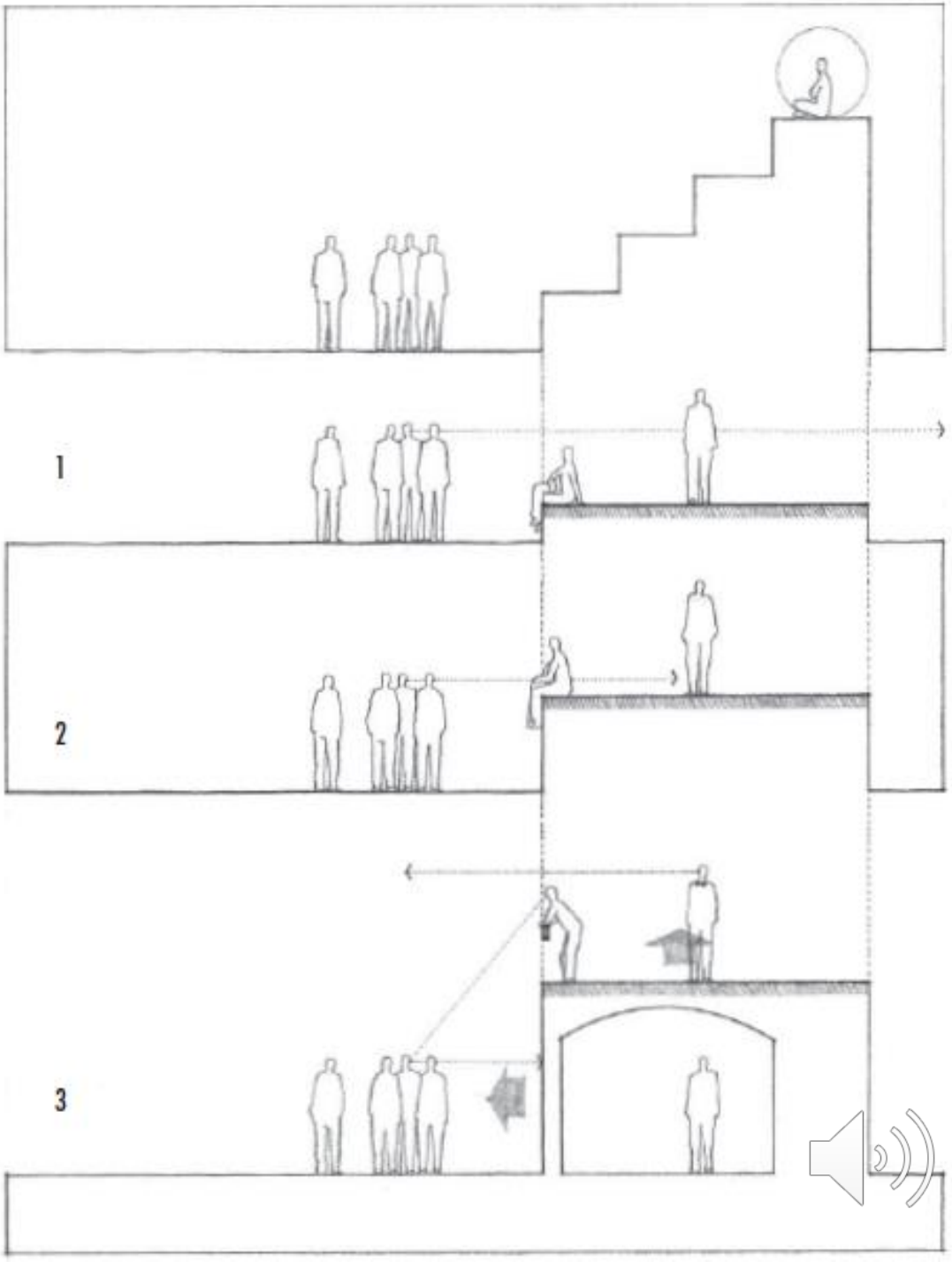
Theater at Epidauros, Greece, c. 350 B.C., Polycleitos

FLOOR PLANE elevated

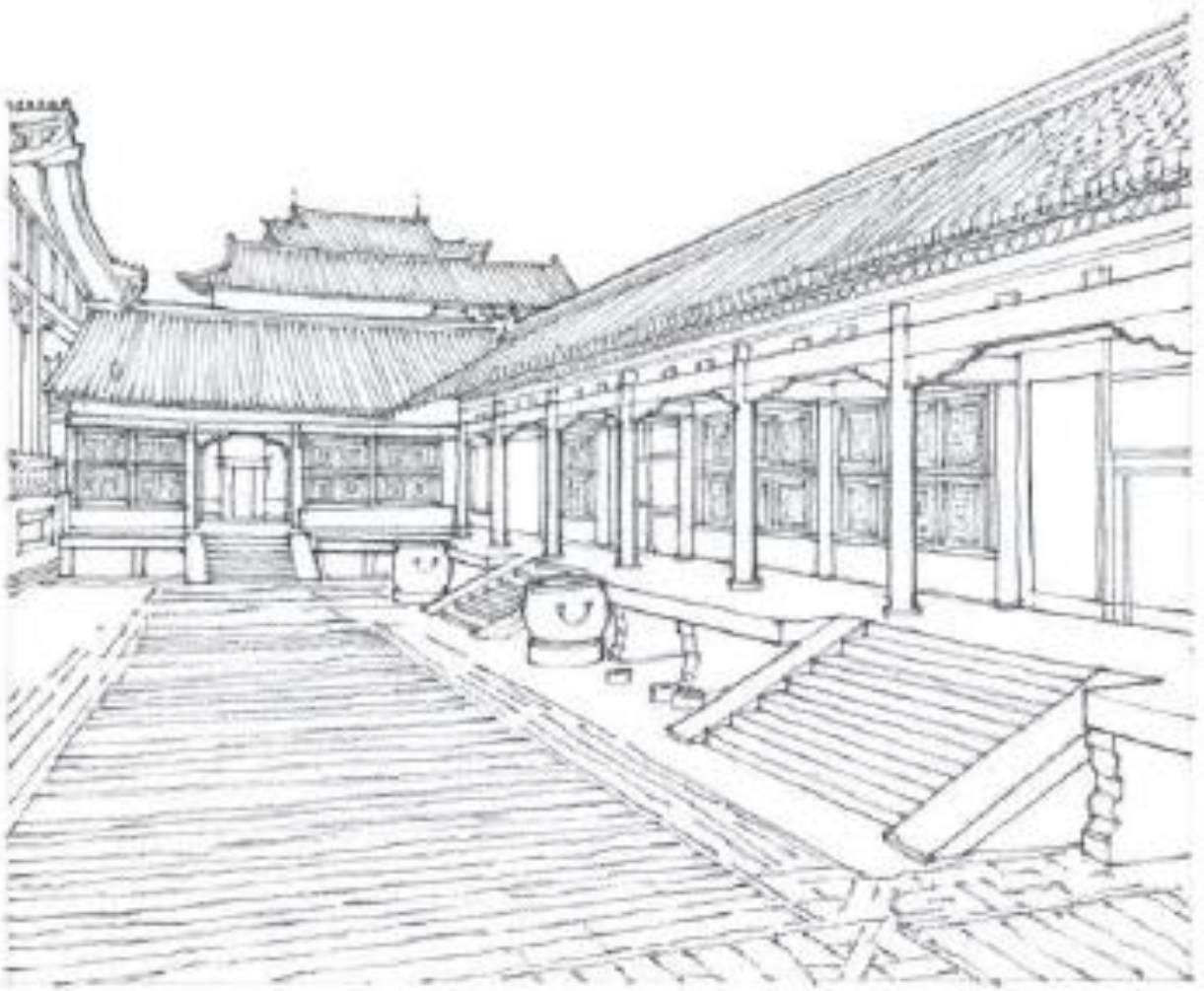
1. The edge of the field is well-defined; visual and spatial continuity is maintained; physical access is easily accommodated.

2. Visual continuity is maintained; spatial continuity is interrupted; physical access requires the use of stairs or ramps.

3. Visual and spatial continuity is interrupted; the field of the elevated plane is isolated from the ground or floor plane; the elevated plane is transformed into a sheltering element for the space below.



FLOOR PLANE elevated



Private courtyard of the **Imperial Palace, the Forbidden City**, Beijing, China, 15th century

An elevated plane can define a transitional space between the interior of a building and the outdoor environment. Combined with a roof plane, it develops into the semiprivate realm of a porch or veranda.


FLOOR PLANE
elevated
Kyoto Japan 2013

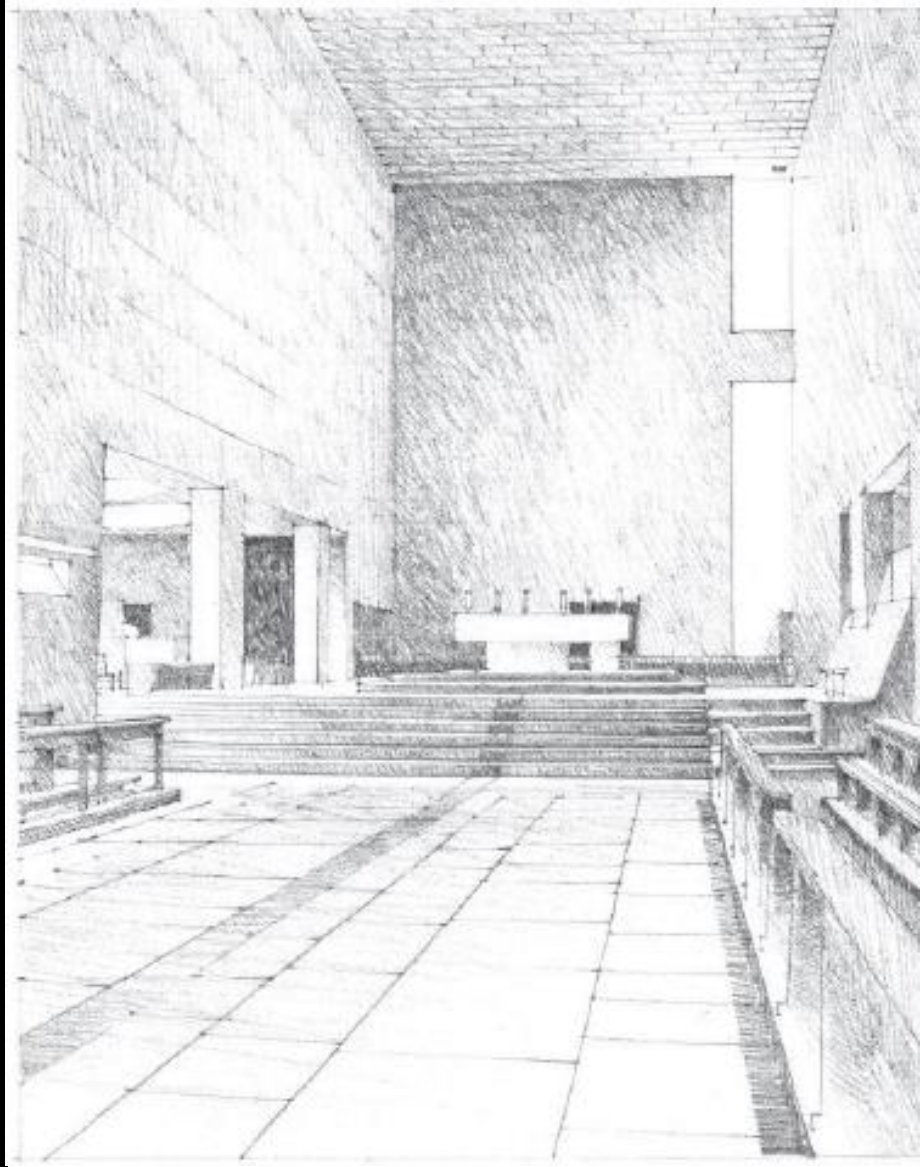
FLOOR PLANE elevated

"to define a sacred or honorific place" [1]

Emperors Seat in imperial Palace, Kyoto Japan 17th century

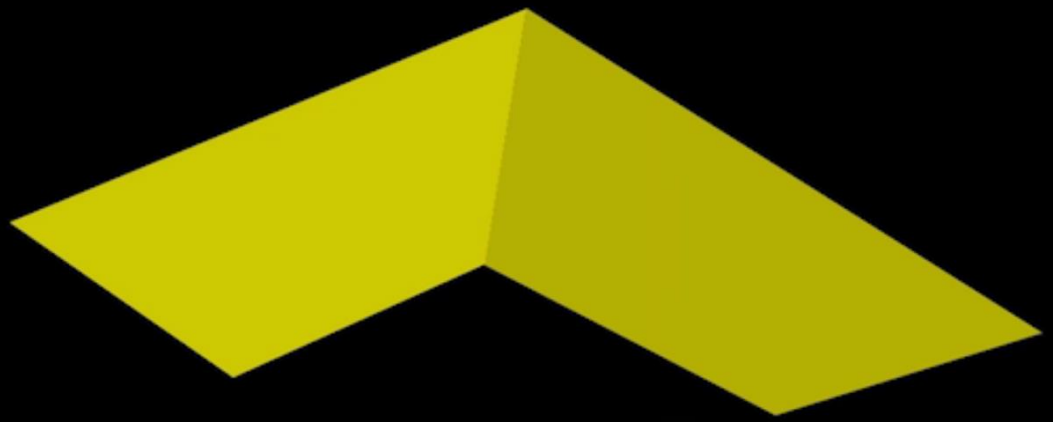
FLOOR PLANE elevated

A section of the floor plane can be elevated to establish a singular zone of space within a larger room or hall. This raised space can serve as a retreat from the activity around it or be a platform for viewing the surrounding space. Within a religious structure, it can demarcate a sacred, holy, or consecrated place.



High Altar in the Chapel at the **Cistercian Monastery of La Tourette**, near Lyons, France, 1956–1959, Le Corbusier

*"**OVERHEAD PLANE** can be **ROOF** that spans and shelters the interior"* [1]

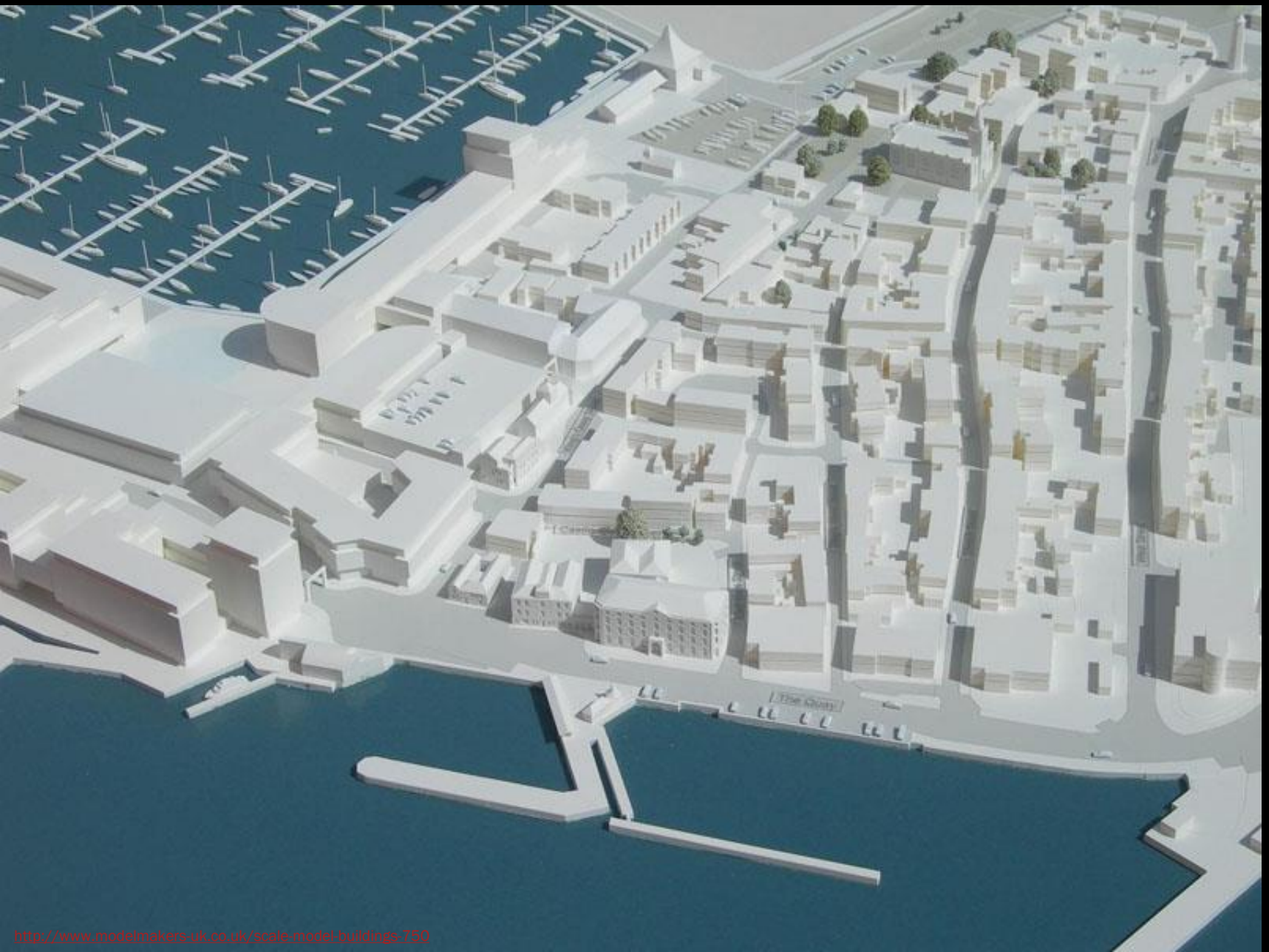


“ARBORS, TRELLISES and PERGOLAS enclose outdoor space while allowing filtered sunlight and breezes to penetrate” [1]

https://thearbor.com/the-arbor-inpatient-addiction-treatment-program

ROOF PLANE

“can merge with the walls to emphasize volume of the building mass” [1]



http://www.modelmakers-uk.co.uk/scale-model-buildings-750

ROOF PLANE

“can be comprised of hats that articulate spaces within” [1]

https://www.roofingcalc.com/top-20-roof-types/

ROOF PLANE

“can be expressed as a single sheltering form that encompasses a variety of spaces with it's canopy” [1]

http://www.architen.com/projects/elfe-canopy-ay-central-shopping-centre/

ROOF PLANE

"can be expressed as a single sheltering form that encompasses a variety of spaces with it's canopy" [1]

Slide from
J Wunderlich
lecture on
Japanese
Architecture and
Urban Design
PDF PPTX-w/audio
MP4 YouTube

ROOF PLANE

Sample Assignment #1

Watch “Japanology Plus - Roof Tilers” https://www.youtube.com/watch?v=BPQpagyvJ08

ROOFS

Architectural Forms
Architectural Engineering Specifications (for a GREEN ROOF)

Part 1

1. Create one **1/16"=1'-0" scale** physical model, using any materials, or make a model using any 3D modeling software (see Revit vs. Sketchup Tutorial), of the simple shell of one British buildings with a distinct roof type as shown below (or another Western shaped form), and another one like one of the Japanese “styles” below (or another Asian shaped form); also at **1/16"=1'-0" scale**. No windows or doors are required, just the basic form of the building shape, but do make the overhangs look like they should. These are “Massing Models” but with a little bit of detail at the overhangs. You may want to pick forms that remind you of something that inspired you.

2. Submit photos of your models, and briefly state why your two models to the class and state why you choose them, how they differ, and why you believe the actual buildings they represent differ or are similar (e.g., for reasons that are environmental, cultural, structural, material, craftsmanship, spiritual, scale, etc.).

Part 2

1. Go to **AIA Graphics Standards version 12**, starting on page 468, or whatever page on whatever version of the book you have access to, to learn about roofs and the specifics of building “Envelopes”.

2. Go to **AIA Graphics Standards version 12**, starting on page 492 (look at a friend’s book if you don’t have this version) to begin learning about green roofs so you can change the below specification in an educated way. You may also reference this Excerpt from my 10th edition of the AIA graphic standards, On “Energy and Environmental Design” (chapter 18)

3. Go to **Sweets Catalog** online (https://sweets.construction.com/) and find Manufacturers data to add to your version of the specification below, and possibly to integrate that data with your Revit 3D Drawings and **Revit’s BIM (Building Information Modeling)** system … but using Revit is entirely optional, especially since no drawings are required for this assignment.

4. Submit **three** very specific things you would change in the **GREEN ROOF** specification below, and exactly why you are specifying these things. Everybody should pick different things to change as much as possible. Cite specific section numbers that you are changing in the sample specification below, and why.

3. Present to the class

ROOF PLANE

ROOFS
Architectural Forms

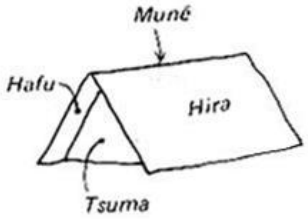
- British types

Classifying the UK's roofs from aerial imagery using deep learning with CNTK
By Chris Walden April 18, 2018
https://blogs.technet.microsoft.com/uktechnet/2018/04/18/classifying-the-uks-roofs-from-aerial-imagery-using-deep-learning-with-cntk/

ROOFS

Architectural Forms

- Japanese types *(From Pinterest)*



Roof styles


Irimoya


Kirizuma


Hogyo

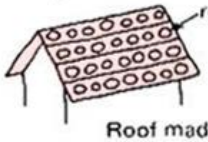

Yosemune

Types of roof

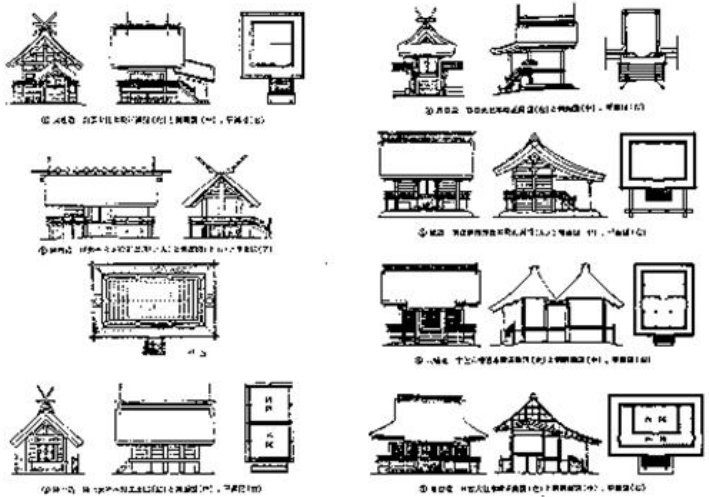

Roof made of plant materials


Metal roof


Tiled roof



Roof made of wooden boards weighted down with rocks



ROOF PLANE

Architectural Engineering Specifications

- Roofs are part of Masterformat Division 7 *(from Wikipedia)*

Before November 2004, MasterFormat was composed of 16 Divisions:

- Division 1 — General Requirements
- Division 2 — Site Construction
- Division 3 — Concrete
- Division 4 — Masonry
- Division 5 — Metals
- Division 6 — Wood and Plastics
- **Division 7 — Thermal and Moisture Protection**
- Division 8 — Doors and Windows
- Division 9 — Finishes
- Division 10 — Specialties
- Division 11 — Equipment
- Division 12 — Furnishings
- Division 13 — Special Construction
- Division 14 — Conveying Systems
- Division 15 — Mechanical (Ex. Plumbing and HVAC)
- Division 16 — Electrical

MASTERFORMAT 1988 EDITION

Same as MasterFormat 1995 except the following:

- Division 2 — Sitework

ROOF PLANE

ROOFS

Architectural Engineering Specifications

- Roofs are part of Masterformat Division 7 *(from Wikipedia)*

The current **MasterFormat** Divisions are:

PROCUREMENT AND CONTRACTING REQUIREMENTS GROUP

- Division 00 — Procurement and Contracting Requirements

SPECIFICATIONS GROUP

General Requirements Subgroup

- Division 01 — General Requirements

Facility Construction Subgroup

- Division 02 — Existing Conditions
- Division 03 — Concrete
- Division 04 — Masonry
- Division 05 — Metals
- Division 06 — Wood, Plastics, and Composites
- Division 07 — Thermal and Moisture Protection
- Division 08 — Openings
- Division 09 — Finishes
- Division 10 — Specialties
- Division 11 — Equipment
- Division 12 — Furnishings
- Division 13 — Special Construction
- Division 14 — Conveying Equipment
- Division 15 — *RESERVED FOR FUTURE EXPANSION*
- Division 16 — *RESERVED FOR FUTURE EXPANSION*
- Division 17 — *RESERVED FOR FUTURE EXPANSION*
- Division 18 — *RESERVED FOR FUTURE EXPANSION*
- Division 19 — *RESERVED FOR FUTURE EXPANSION*

Facility Services Subgroup:

- Division 20 — *RESERVED FOR FUTURE EXPANSION*
- Division 21 — Fire Suppression
- Division 22 — Plumbing
- Division 23 — Heating, Ventilating, and Air Conditioning (HVAC)
- Division 24 — *RESERVED FOR FUTURE EXPANSION*
- Division 25 — Integrated Automation
- Division 26 — Electrical
- Division 27 — Communications
- Division 28 — Electronic Safety and Security
- Division 29 — *RESERVED FOR FUTURE EXPANSION*

Site and Infrastructure Subgroup:

- Division 30 — *RESERVED FOR FUTURE EXPANSION*
- Division 31 — Earthwork
- Division 32 — Exterior Improvements
- Division 33 — Utilities
- Division 34 — Transportation
- Division 35 — Waterway and Marine Construction
- Division 36 — *RESERVED FOR FUTURE EXPANSION*
- Division 37 — *RESERVED FOR FUTURE EXPANSION*
- Division 38 — *RESERVED FOR FUTURE EXPANSION*
- Division 39 — *RESERVED FOR FUTURE EXPANSION*

Process Equipment Subgroup:

- Division 40 — Process Interconnections
- Division 41 — Material Processing and Handling Equipment
- Division 42 — Process Heating, Cooling, and Drying Equipment
- Division 43 — Process Gas and Liquid Handling, Purification and Storage Equipment
- Division 44 — Pollution and Waste Control Equipment
- Division 45 — Industry-Specific Manufacturing Equipment
- Division 46 — Water and Wastewater Equipment
- Division 47 — *RESERVED FOR FUTURE EXPANSION*
- Division 48 — Electrical Power Generation
- Division 49 — *RESERVED FOR FUTURE EXPANSION*

http://users.etown.edu/w/wunderjt/Architecture%20Lectures/499B_Assignment_2_S19_ROOFS.pdf

ROOF PLANE

Sample Assignment #2

Residential Design with Clerestory Window and Thermal Mass Wall; and with a Green Roof

Design a residence on a site of your choosing, and orient the building so that a clerestory window allows sunlight to enter the house and shine on a Thermal Mass Wall made of a material of your choosing…e.g., like in figures 2, 3, 5, or 6 below, but also including a thermal mass wall like the "Water Wall" shown in figure 6, or just a thick wall made of a good thermal mass material like concrete. Also thoroughly read through Excerpt from my 10th edition of the AIA graphic standards, On "Energy and Environmental Design" (chapter 18) where these figures are from. Create an **1/8"=1'-0" scale** physical model, using any materials, or make a model using any 3D modeling software (see Revit vs. Sketchup Tutorial), and incorporate into your design at least **three other things** from this chapter.

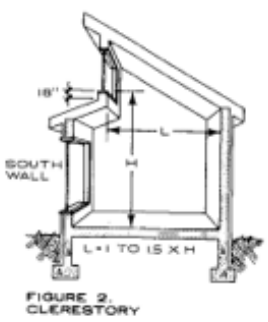


FIGURE 2. CLERESTORY

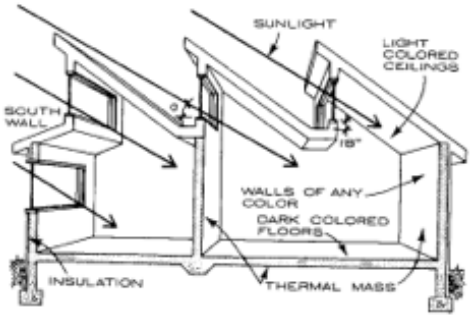


FIGURE 3. SAWTOOTH CLERESTORIES

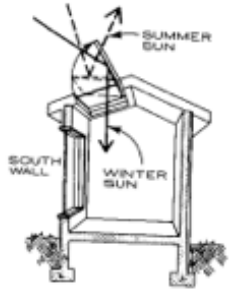


FIGURE 4. SKYLIGHT

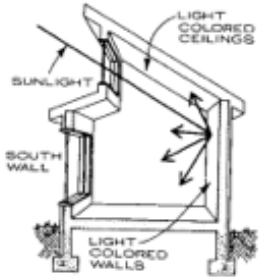


FIGURE 5. REFLECTING DIRECT SUNLIGHT

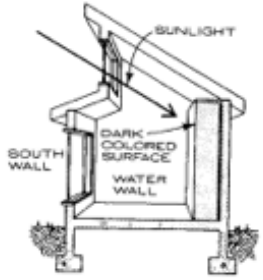
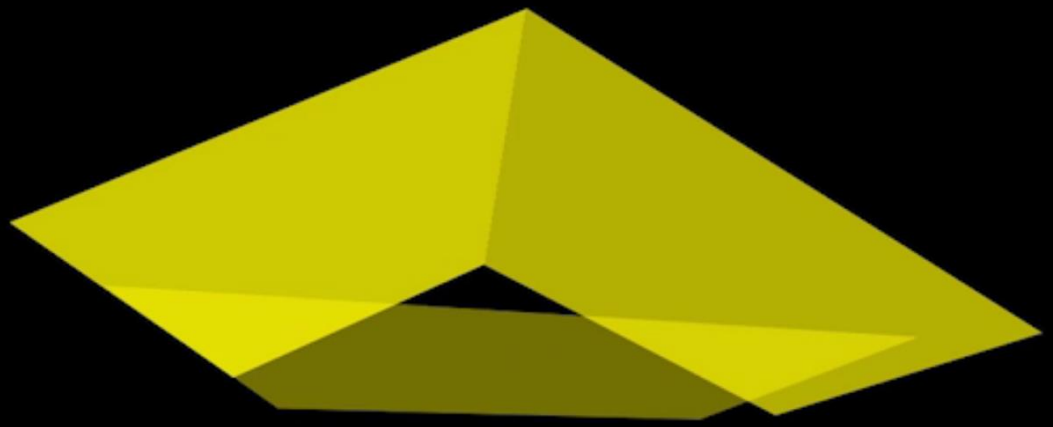


FIGURE 6. WATER WALL

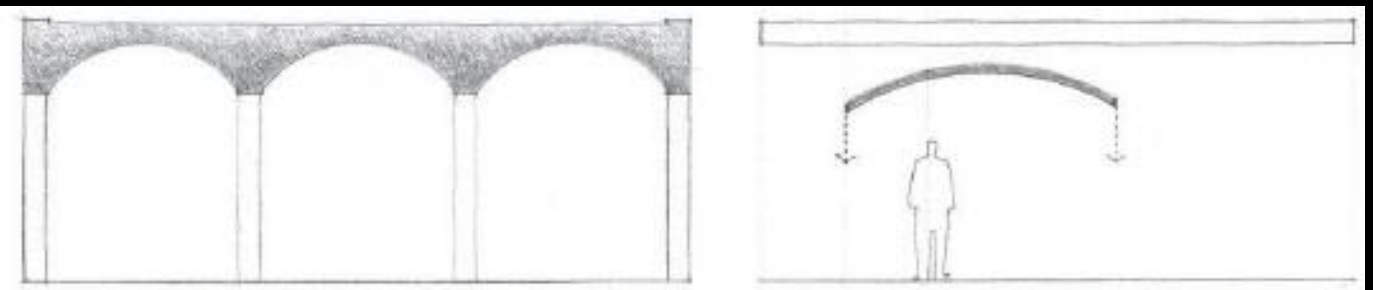
State where exactly your site is, and sketch the approximate perimeter of your site and a footprint of your building clearly identifying which way is south and showing that your clerestory window is oriented to point directly south. Also submit two photos of your model (in the same document) with a light shining in the Clerestory Window at: (1) Noon on the summer solstice; and (2) Noon on the winter solstice, for the latitude of your site (try to approximate the angles as best as possible). And it's up to you how much sunlight you wish to get in on each of those days depending on the climate at your site. Also list in the same document, the three other things from the AIA graphic standards chapter on energy and environmental design that you have incorporated into your design.

CEILING PLANE

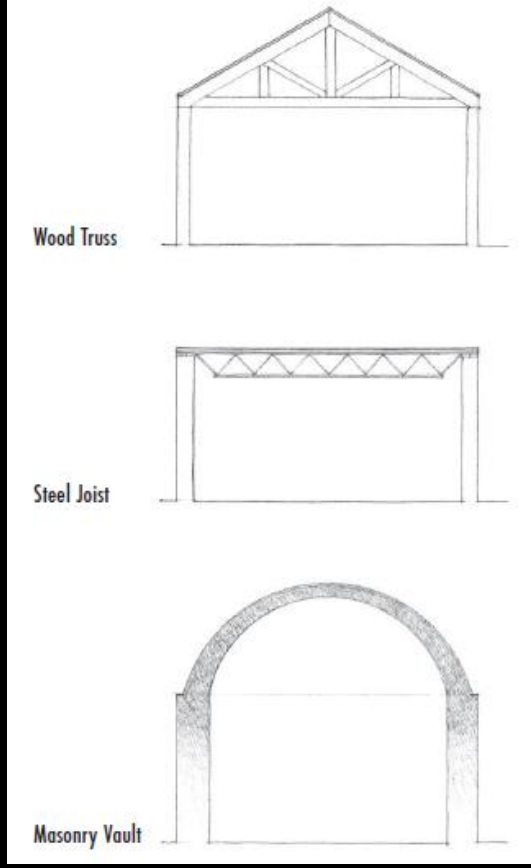
“forms the upper enclosing surface of room” [1]

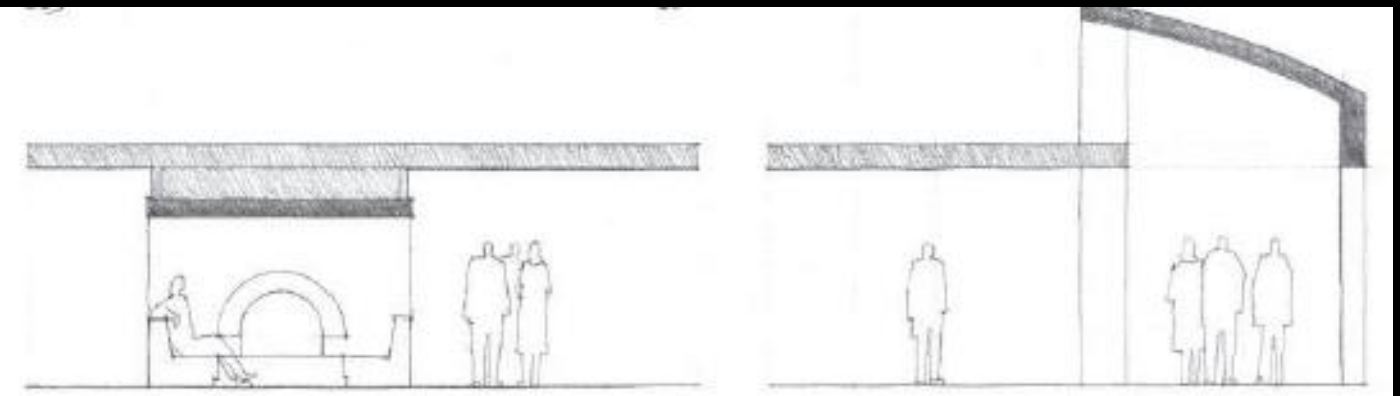


CEILING PLANE



The ceiling plane of an interior space can reflect the form of the structural system supporting the overhead floor or roof plane. Since it need not resist any weathering forces nor carry any major loads, the ceiling plane can also be detached from the floor or roof plane and become a visually active element in a space.

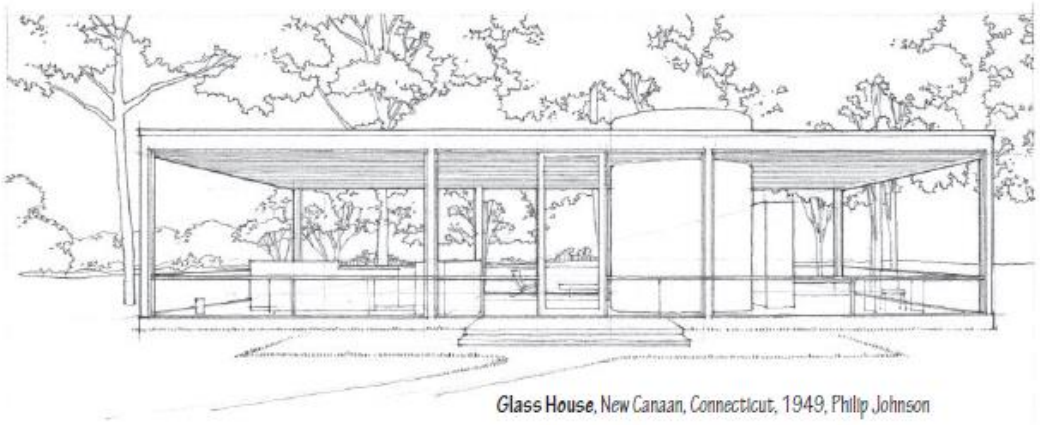




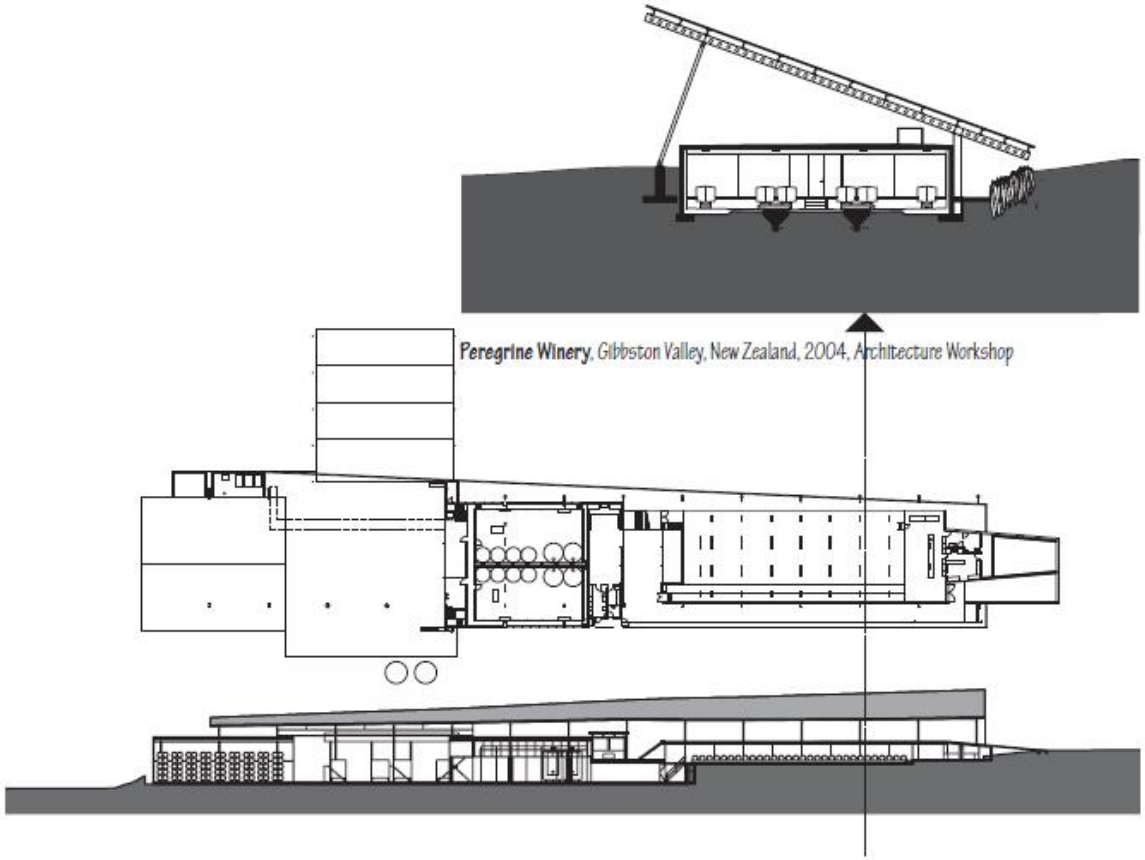
As in the case of the base plane, the ceiling plane can be manipulated to define and articulate zones of space within a room. It can be lowered or elevated to alter the scale of a space, define a path of movement through it, or allow natural light to enter it from above.

CEILING PLANE

The roof plane can be the major space-defining element of a building and visually organize a series of forms and spaces beneath its sheltering canopy.



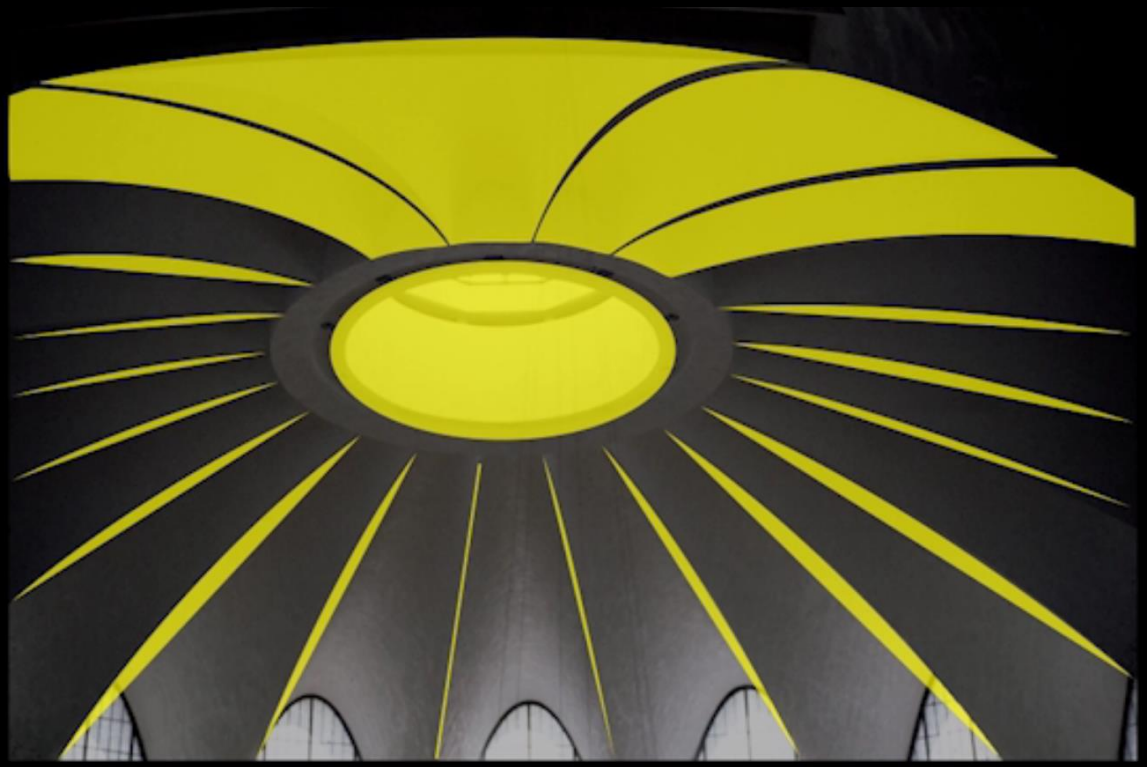
Glass House, New Canaan, Connecticut, 1949, Philip Johnson

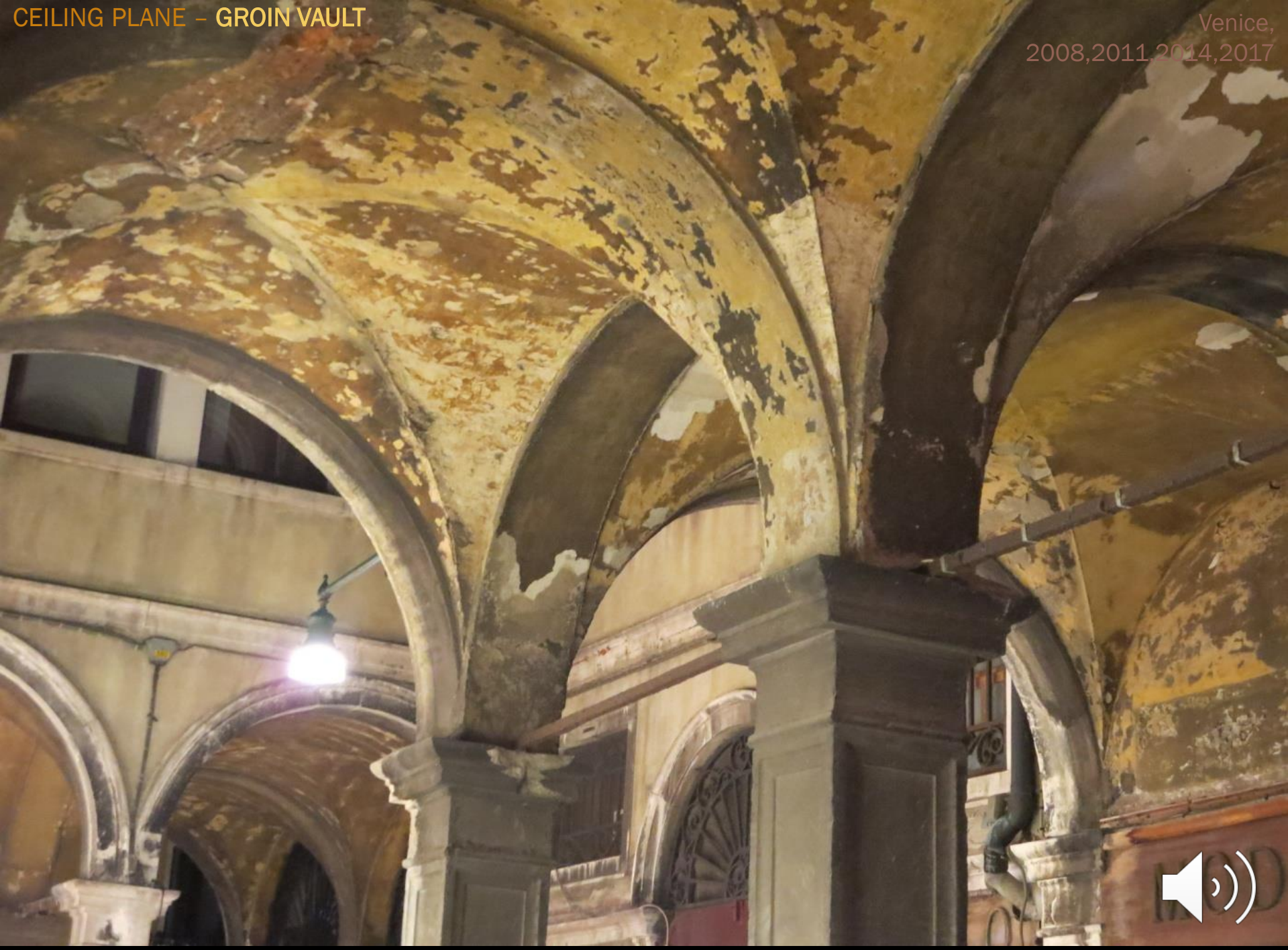


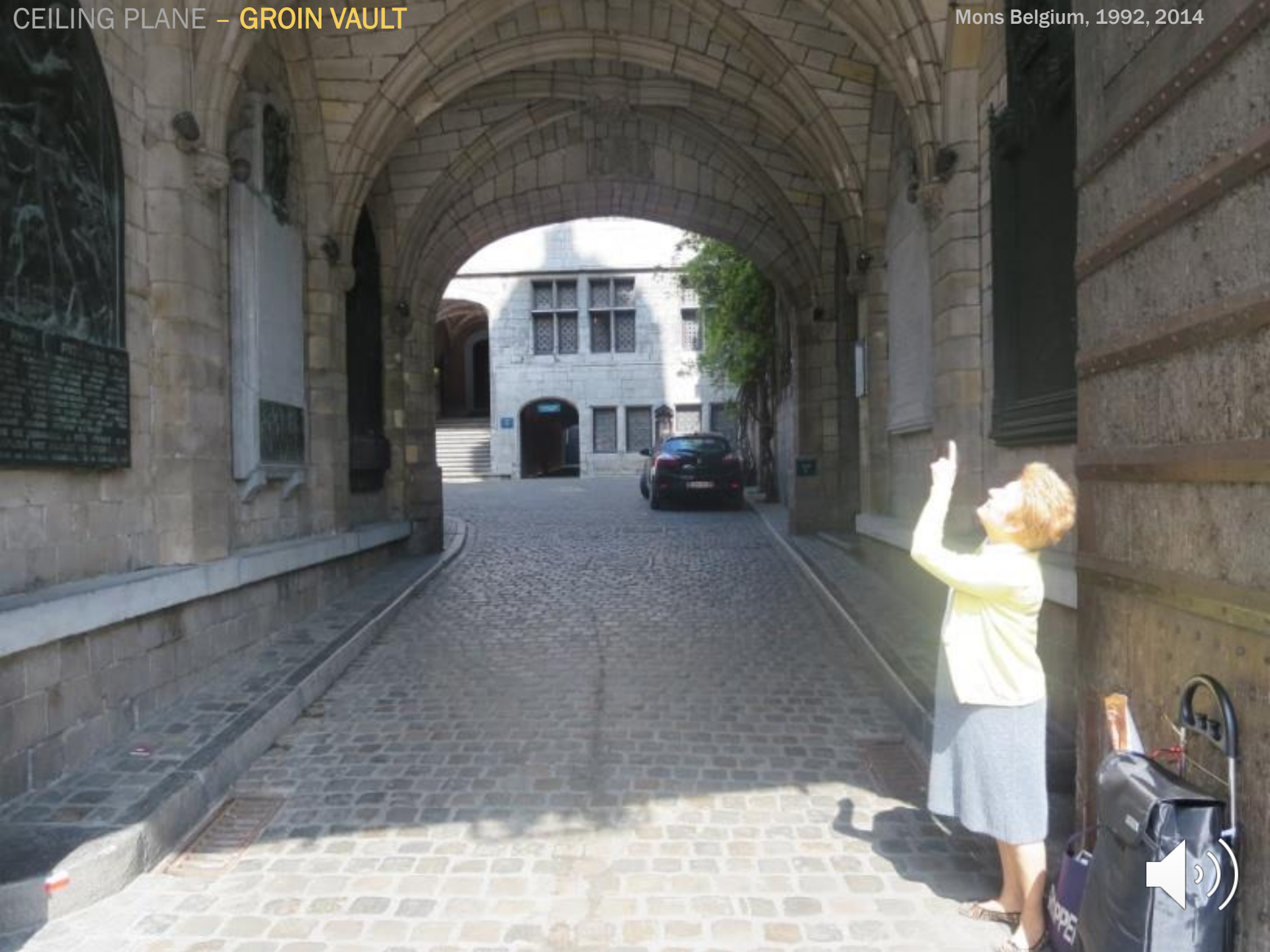
Peregrine Winery, Gibbston Valley, New Zealand, 2004, Architecture Workshop

CEILING PLANE

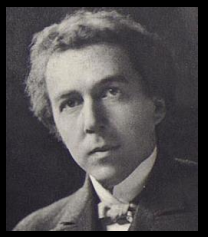
"We walk on floors and physically contact walls, but CEILING PLANE is out of reach and usually purely visual... it may be underside of an overhead floor, and express form of its structure" [1]



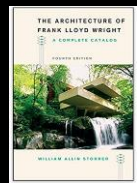

CEILING PLANE – GROIN VAULT
Venice,
2008,2011,2014,2017


CEILING PLANE – GROIN VAULT
Mons Belgium, 1992, 2014

“ can symbolize a SKY VAULT, sheltering and unifying parts of the space … or serve as a repository for frescoes and other art … Or be simply a passive receding surface” [1]



Playroom addition to Frank Lloyd Wright's home in Oak Park (Chicago suburb) in 1895 [3]



Windsor England, 2014


CEILING PLANE – BARREL VAULT
Padua Italy, 2011, 2014

Kyoto Japan, 2013

CEILING PLANE

J Wunderlich 1990

A&E Designer / Builder

School Lane Remodel

Strafford Pennsylvania

I raised Ceiling Plane to extend volume vertically, relieving “compression” feeling of a very low, sagging, ceiling

CEILING PLANE

CEILING PLANE

J Wunderlich 1990
Pennsylvania

CEILING PLANE

J Wunderlich 1990
Pennsylvania

CEILING PLANE

J Wunderlich 1990
Pennsylvania

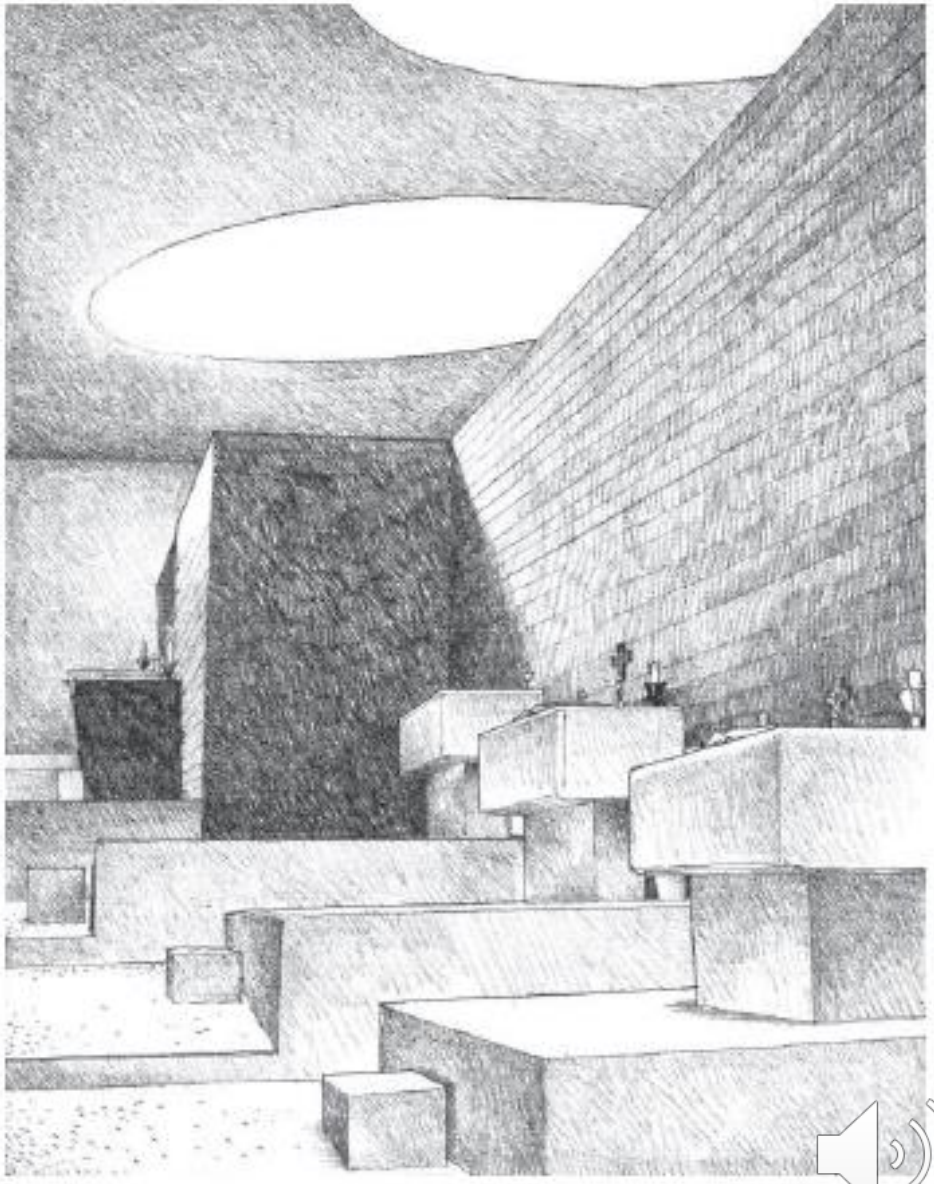
CEILING PLANE

J Wunderlich 1990
Pennsylvania


CEILING PLANE
J Wunderlich 1990
Pennsylvania

CEILING PLANE

Side Chapels, **Cistercian Monastery of La Tourette**, near Lyons, France, 1956–1959, *Le Corbusier*



Well-defined negative areas or voids within an overhead plane, such as for skylights, can be seen as positive shapes that establish the presence of spatial fields below their openings.

CEILING PLANE

J Wunderlich 1990
Pennsylvania

I added skylights to Ceiling Plane to extend volume vertically, relieving the “compression” feeling of a low ceiling; and to bring in light, and to open views to backyard

CEILING PLANE

J Wunderlich 1990
Pennsylvania

CEILING **PLANE**

J Wunderlich 1990
Pennsylvania

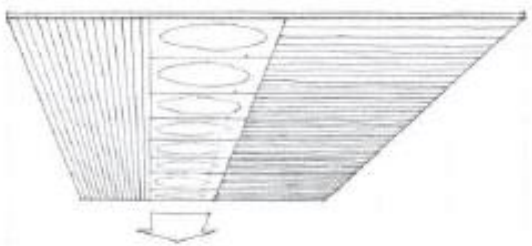
Letting the outside
(and light) in

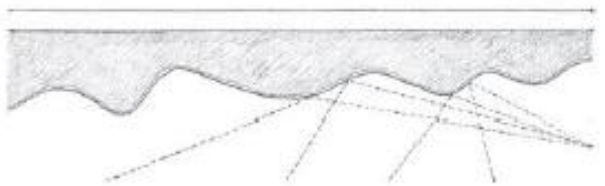
CEILING / ROOF PLANE

J Wunderlich 1990
Pennsylvania

Other work in bathrooms,
throughout house,
and landscape.

CEILING PLANE





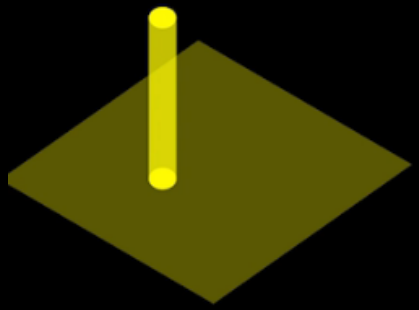
The form, color, texture, and pattern of the ceiling plane can be manipulated as well to improve the quality of light or sound within a space or give it a directional quality or orientation.

https://www.nextgenerationacoustics.com/products/ceiling-cloud-acoustic-baffles

VERTICAL ELEMENTS
DEFINING SPACE

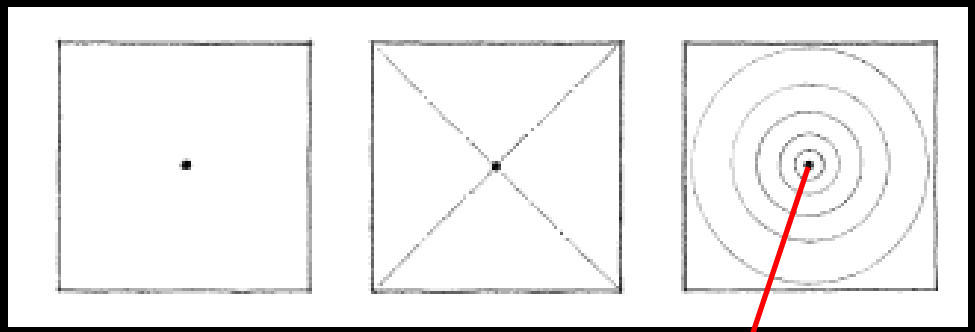
“A column, obelisk, or tower establishes a point on the ground

… and generates space” [1]

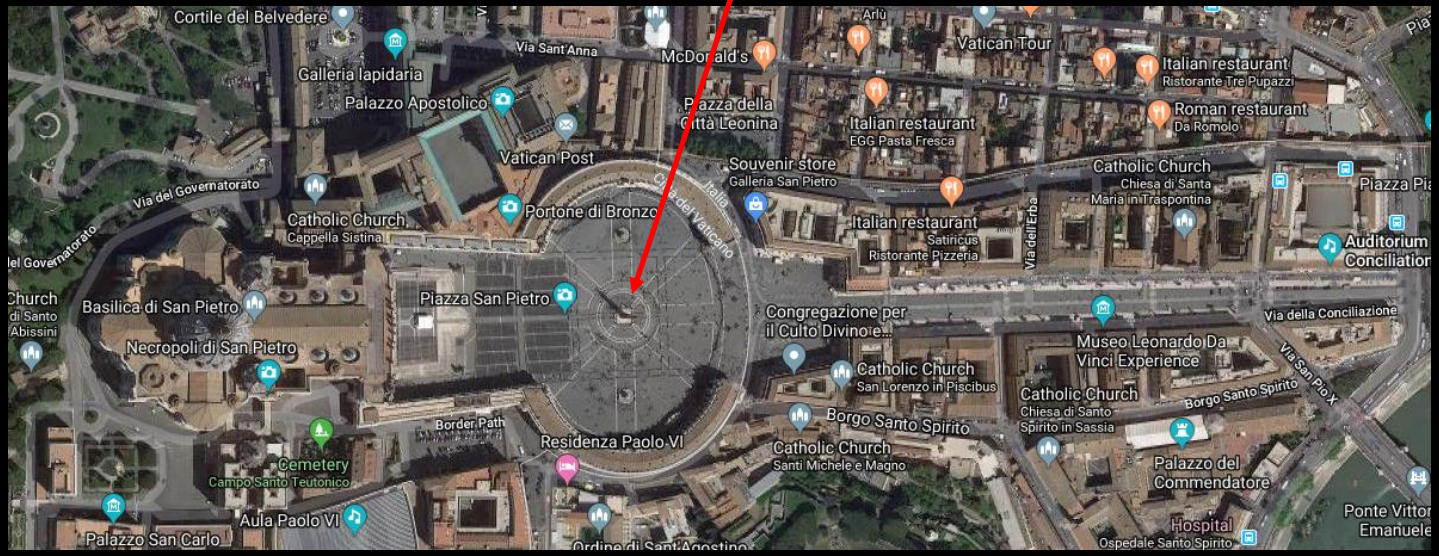


POINT / VERTICAL ELEMENT– a Tower defining space, and a sense of place

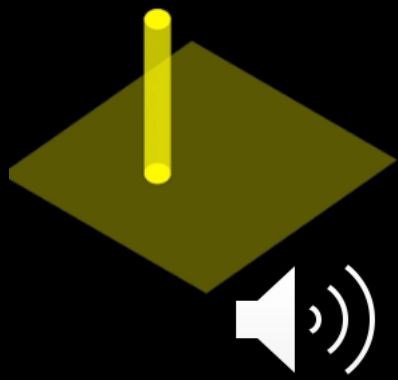
*"**At center of its environment, a point is stable and at rest**, organizing surrounding elements about itself and dominating its field"* [1]



Rome 2011

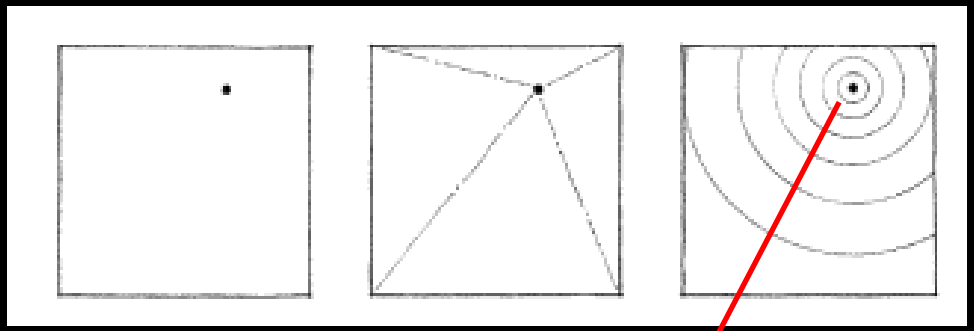


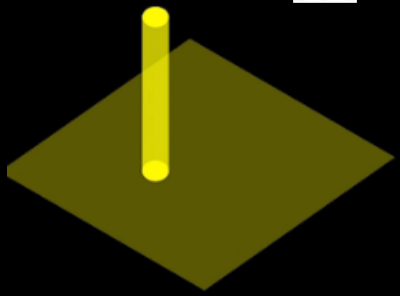
Piazza San Pietro, Vatican City, Rome

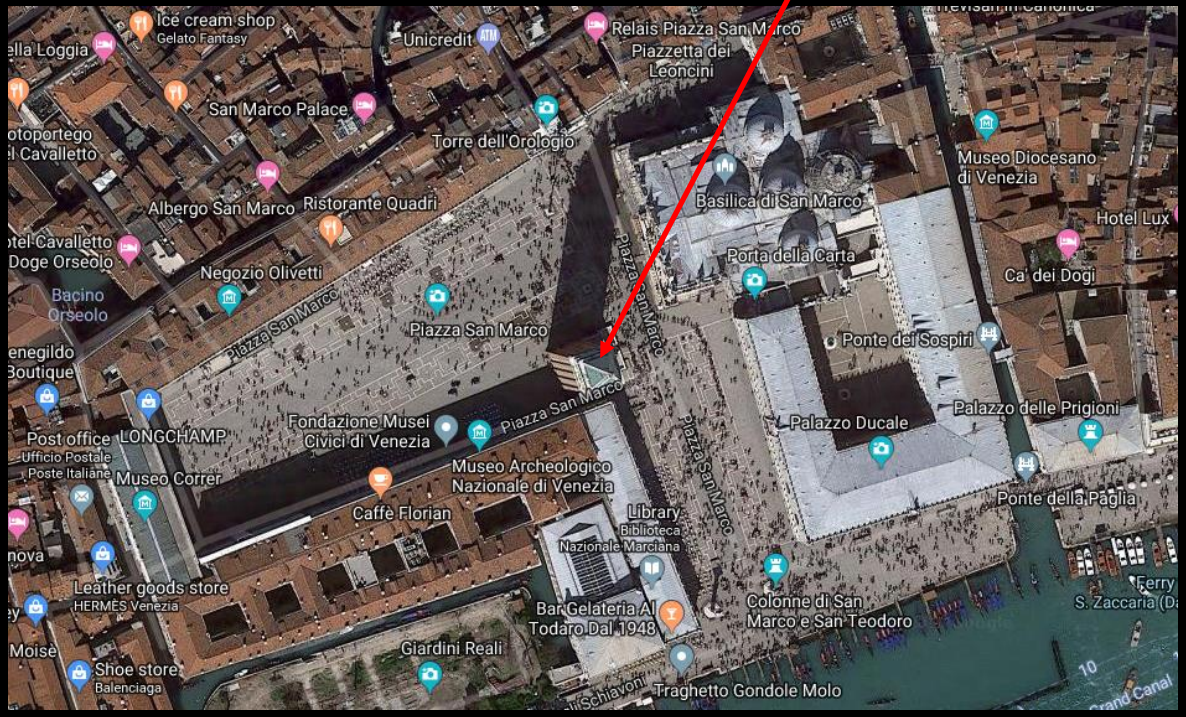


POINT / VERTICAL ELEMENT off-center – >VISUAL TENSION

*'When moved **off center**, it's field becomes more aggressive and begins to compete for visual supremacy. **Visual tension is created between the point and it's field"*** [1]





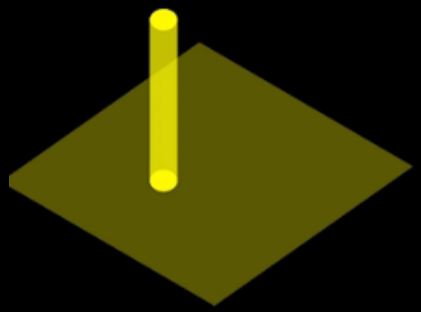


Campanile di San Marco in Piazza San Marco, Venice

Venice 2008,2011,2014,2017

POINT / VERTICAL ELEMENT

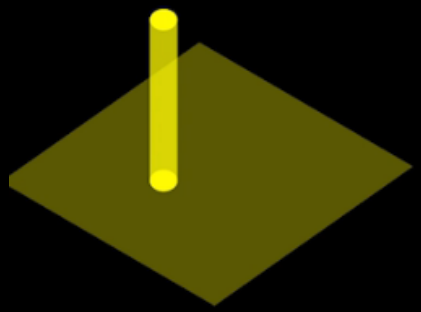
– a Tower defining space,
and a sense of place



Narita Japan 2013

POINT / VERTICAL ELEMENT

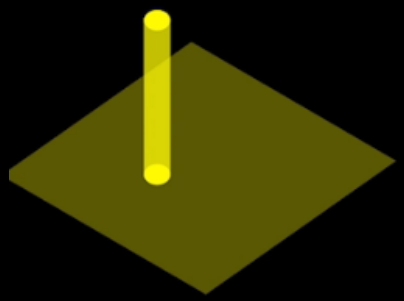
– a Tower defining space,
and a sense of place



Narita Japan 2013

POINT / VERTICAL ELEMENT

– a tree defining space,
and a sense of place



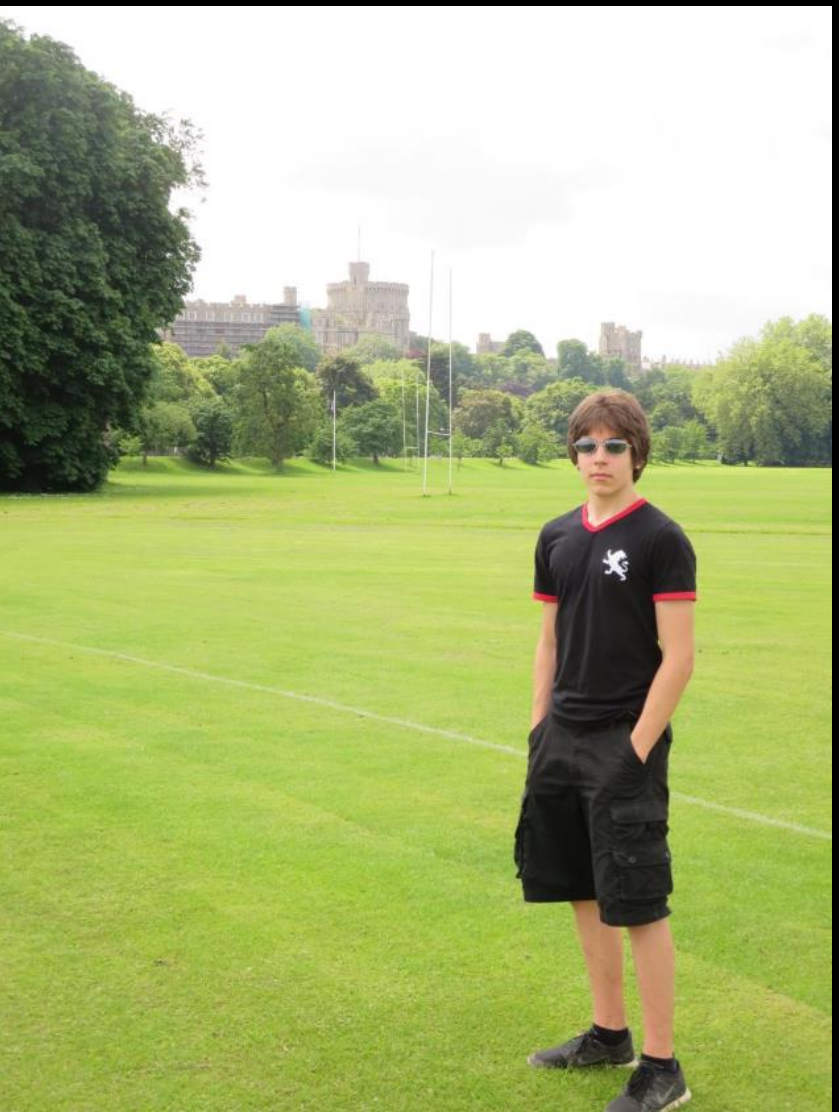
Osaka Japan 2013

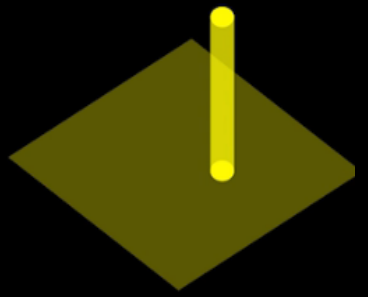

POINT / VERTICAL ELEMENT – a tree defining space, and a sense of place
Hawaii 2013

Hawaii 2013

POINT / VERTICAL ELEMENT – a tree defining space, and a sense of place

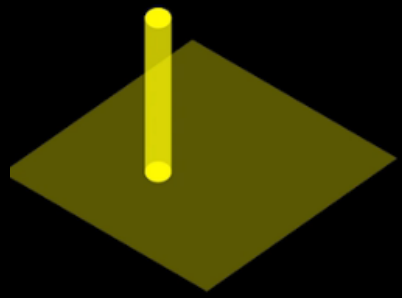
POINT / VERTICAL ELEMENT– a tower defining space, and a sense of place





Windsor Castle, Windsor England 2014

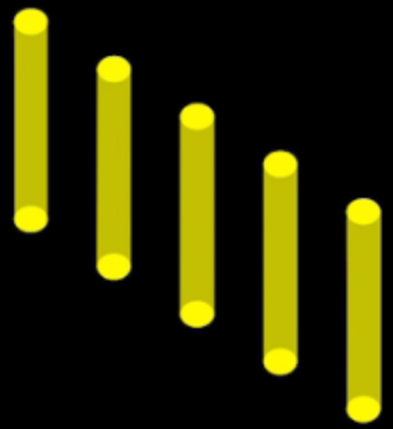
POINT / VERTICAL ELEMENT– a tree defining space, and a sense of place



Bench under large shade tree, Eton College, Windsor England 2014

VERTICAL ELEMENTS
DEFINING SPACE

...a series of vertical elements can form a colonnade that defines an edge of space while permitted continuity between surroundings" [1]

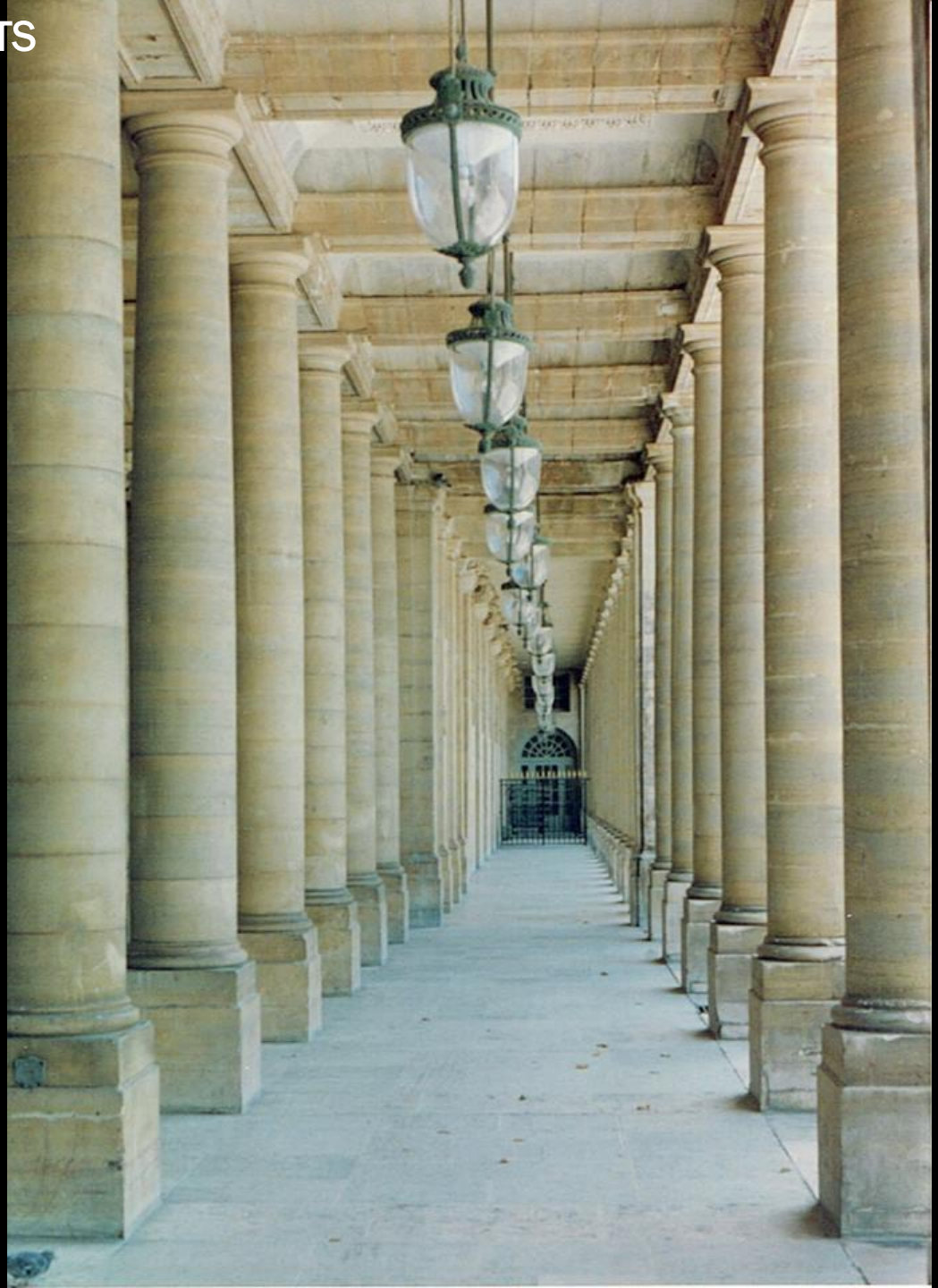


VERTICAL ELEMENTS – *COLONNADE*

“ A series of columns establishes a COLONNADE … a penetrable boundary (plane) of adjacent spaces” [1]

VERTICAL ELEMENTS
– *COLONNADE*

Paris France 1992



VERTICAL ELEMENTS – *COLONNADE*

Paris 1992

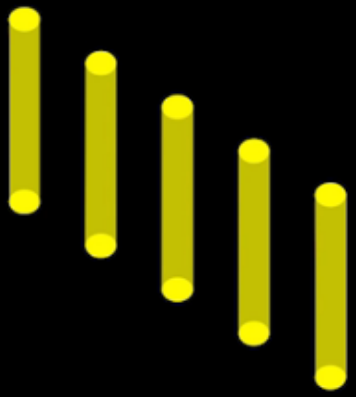
COLONNADE


COLONNADE
Venice 2008,2011,2014,2017
TOSCA

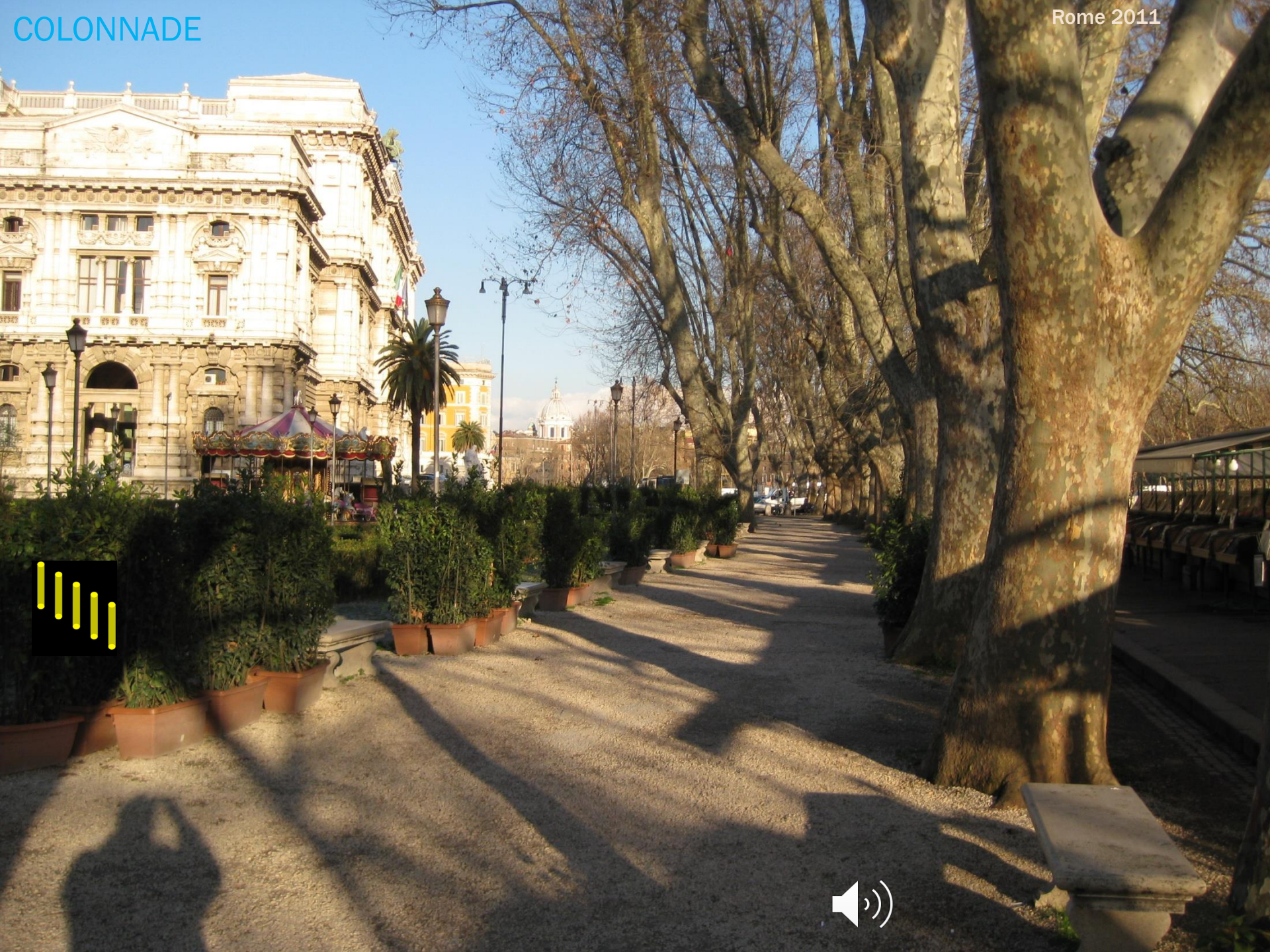
VERTICAL ELEMENTS – *COLONNADE*

Genoa Italy, 2004

VERTICAL ELEMENTS – *COLONNADE*



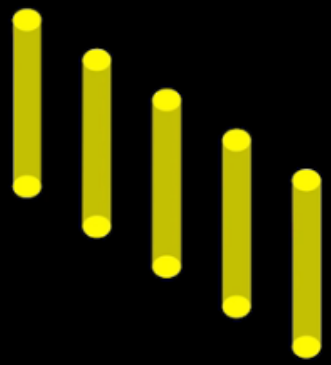
Trento Italy, 2008,2009


COLONNADE
Rome 2011


COLONNADE
Mons Belgium 1992,2014


COLONNADE
Kyoto Japan 2013

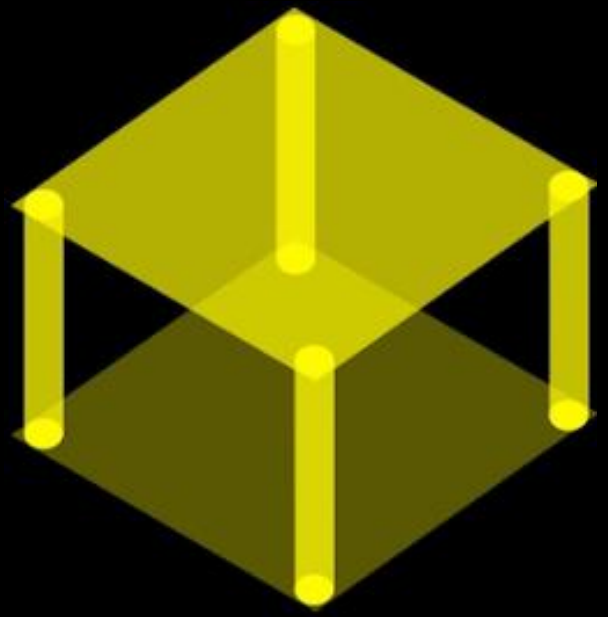
COLONNADE



Kyoto Japan 2013

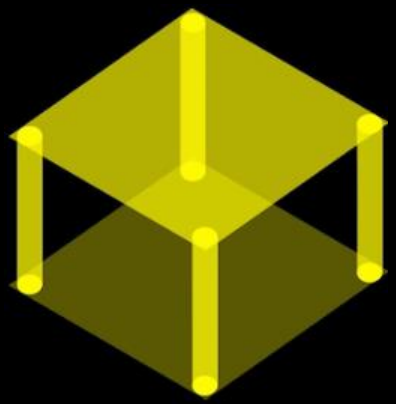
VERTICAL ELEMENTS
DEFINING SPACE

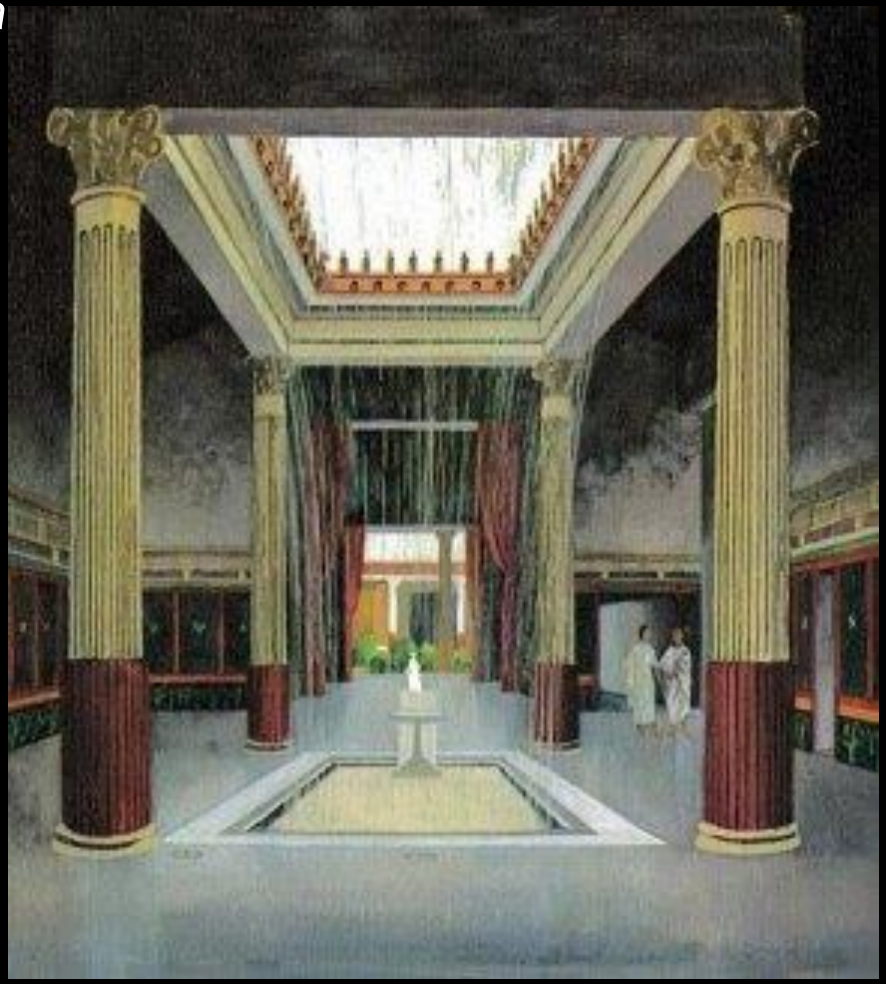
“Three or more vertical elements can define a space supporting a canopy” [1]



VERTICAL ELEMENTS
DEFINING SPACE

"Four columns can form an AEDICULE; a pavilion that serves as a shrine or symbolic center of a space" [1]





House of the Silver Wedding,
Pompeii, 2nd century B.C.

VERTICAL ELEMENTS DEFINING SPACE

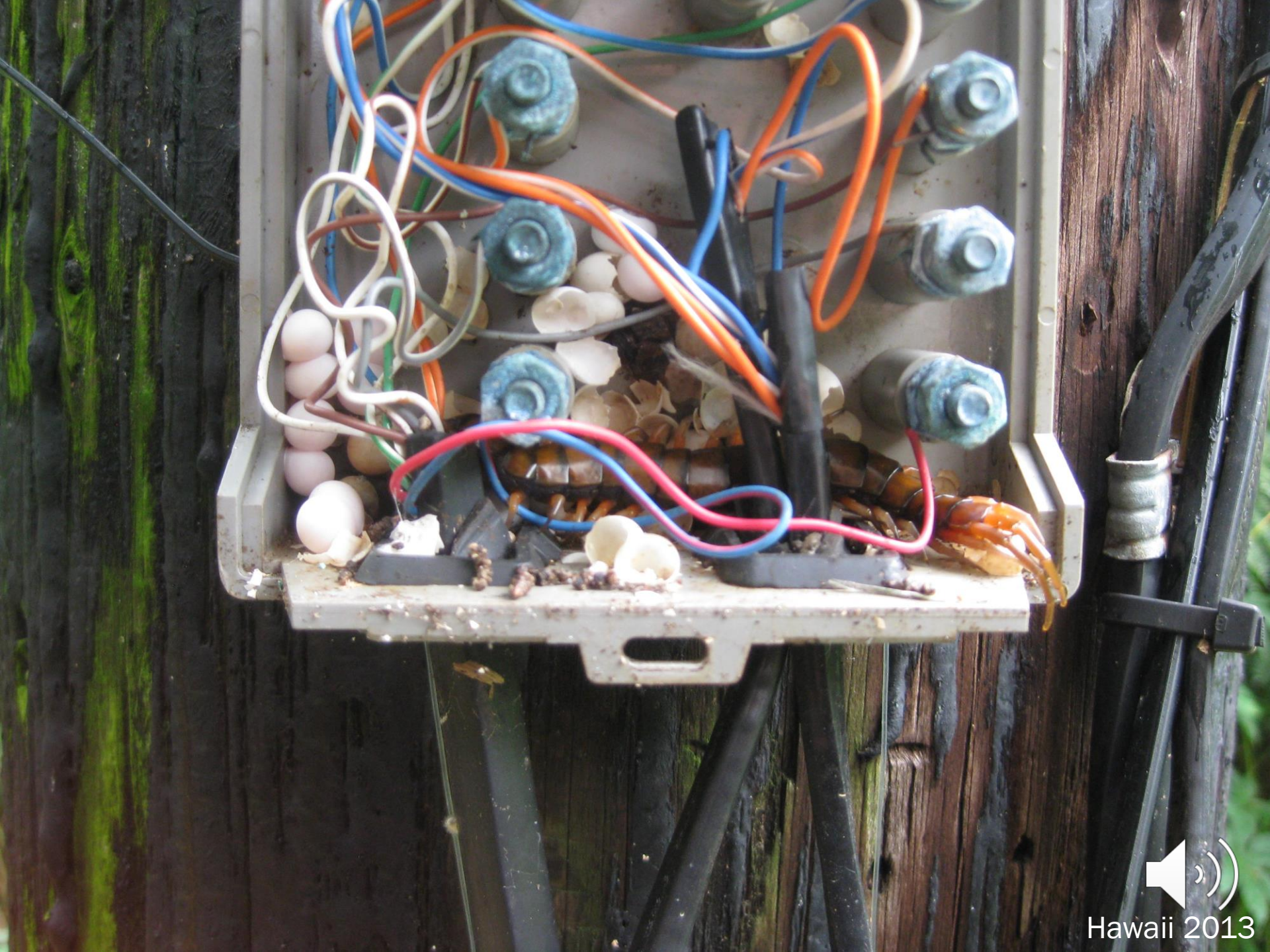
VERTICAL ELEMENTS - *A grove of trees can define a space*

Hawaii 2013

VERTICAL ELEMENTS

A grove of trees can define a space

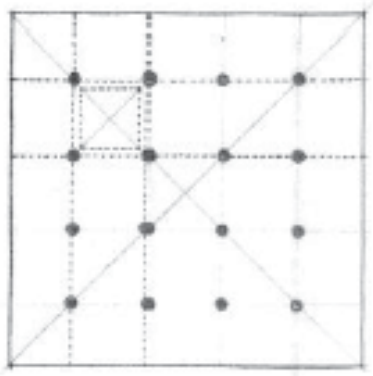
Hawaii 2013


Hawaii 2013

VERTICAL ELEMENTS – A GRID defining space

Johnson Wax Building
Ricine Wisconson
1939 Frank Lloyd Wright

https://www.m-rad.com/blog/2017/5/22/150-years-of-frank-lloyd-wright



A grid of columns within a large room or hall not only serves to support the floor or roof plane above. The orderly rows of columns also punctuate the spatial volume, mark off modular zones within the spatial field, and establish a measurable rhythm and scale that make the spatial dimensions comprehensible.

VERTICAL ELEMENTS – A GRID defining space

Typical Commercial Construction Floor Plan (Steel or Reinforced Concrete skeleton)

Structural Load carried by **core** and **columns**

Glass **CURTAIN WALL** doesn't carry load

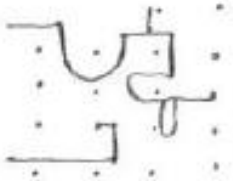
This allows a **SHELL** to be built, followed by **TENANT IMPROVEMENTS** in interior

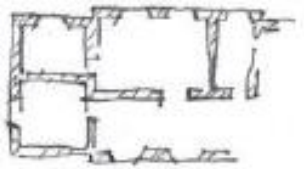
Tenants given a fixed $ per square foot, and they use a different designer (a "**SPACE PLANNER**")

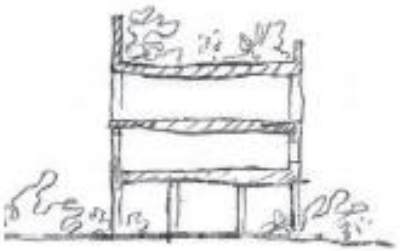
http://www.expresstowers.in/images/floor_plan1_1.jpg

VERTICAL ELEMENTS – A GRID defining space

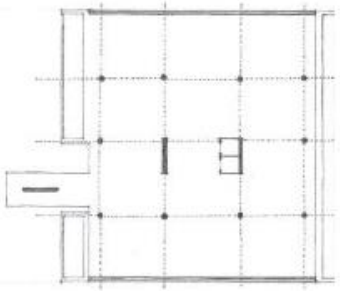
Concrete slabs could cantilever beyond their column supports and enable the "free facade" of the building to be "light membranes" of "screen walls and windows." Within the building, a "free plan" was possible since the enclosure and layout of spaces were not determined or restricted by the pattern of heavy load-bearing walls. Interior spaces could be defined with non-load-bearing partitions, and their layout could respond freely to programmatic requirements.





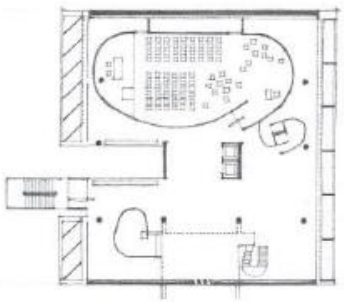


Sketches for *The Five Points of the New Architecture*, 1926, Le Corbusier



Column-grid pattern

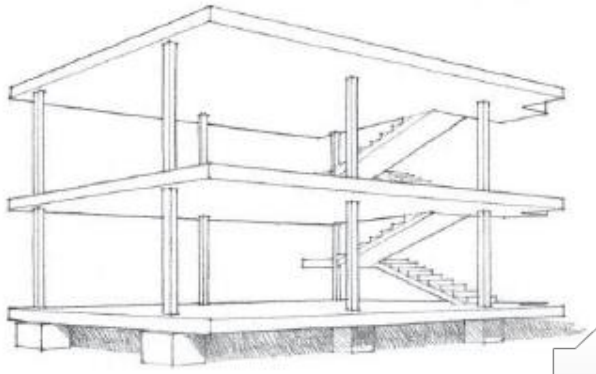
1st floor plan



2nd floor plan

3rd floor plan

1. Millowners' Association Building,
Ahmedabad, India, 1954, Le Corbusier



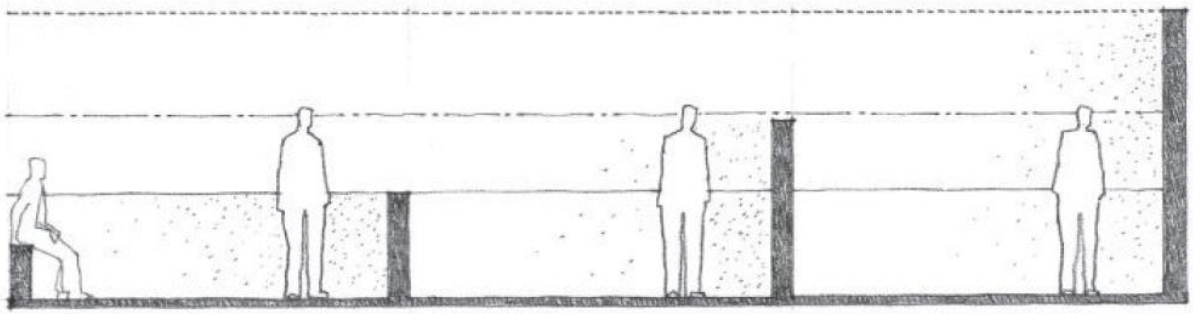
Dom-ino House Project, 1914, Le Corbusier

WALL PLANE

“It's shape, color, and pattern determine what degree it defines spatial boundaries, or serves as a unifying element for the parts of a space” [1]

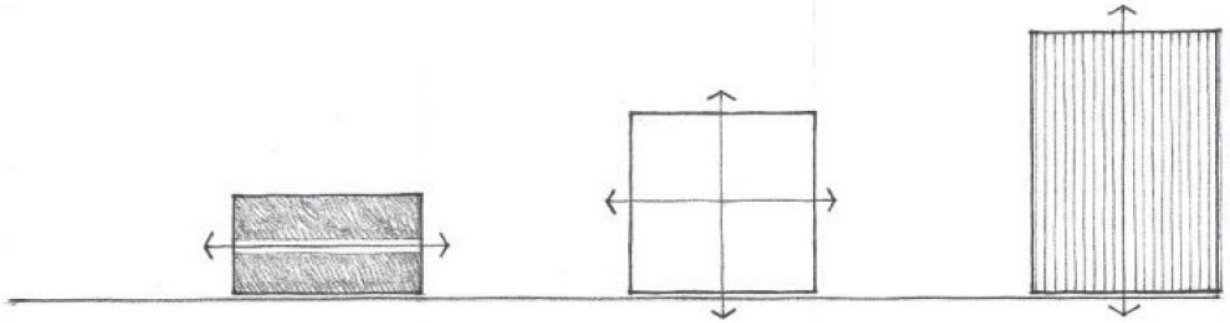
WALL PLANE

The height of a vertical plane relative to our body height and eye level is the critical factor that affects the ability of the plane to visually describe space. When 2-feet high, a plane defines the edge of a spatial field but provides little or no sense of enclosure. When waist-high, it begins to provide a sense of enclosure while allowing for visual continuity with the adjoining space. When it approaches our eye level in height, it begins to separate one space from another. Above our height, a plane interrupts the visual and spatial continuity between two fields and provides a strong sense of enclosure.

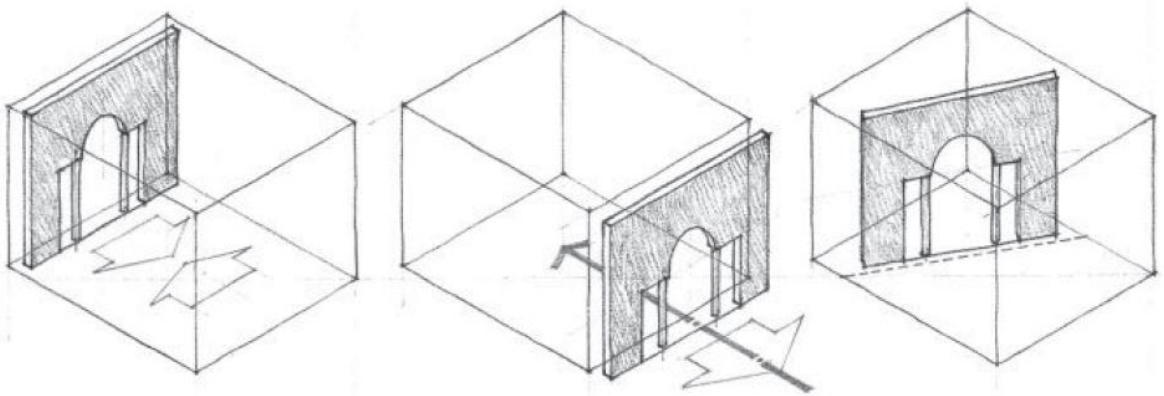


WALL PLANE

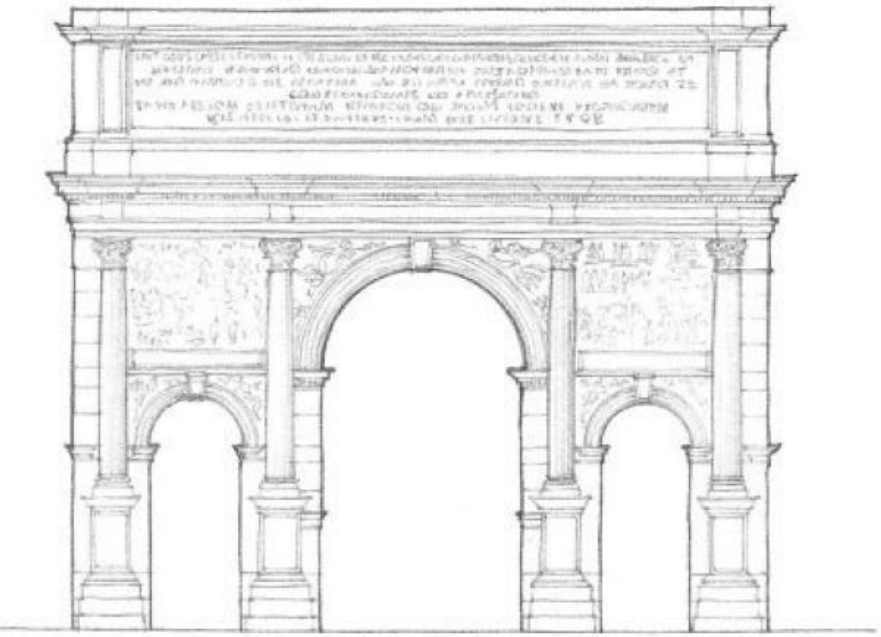
The surface color, texture, and pattern of a plane affect our perception of its visual weight, scale, and proportion.



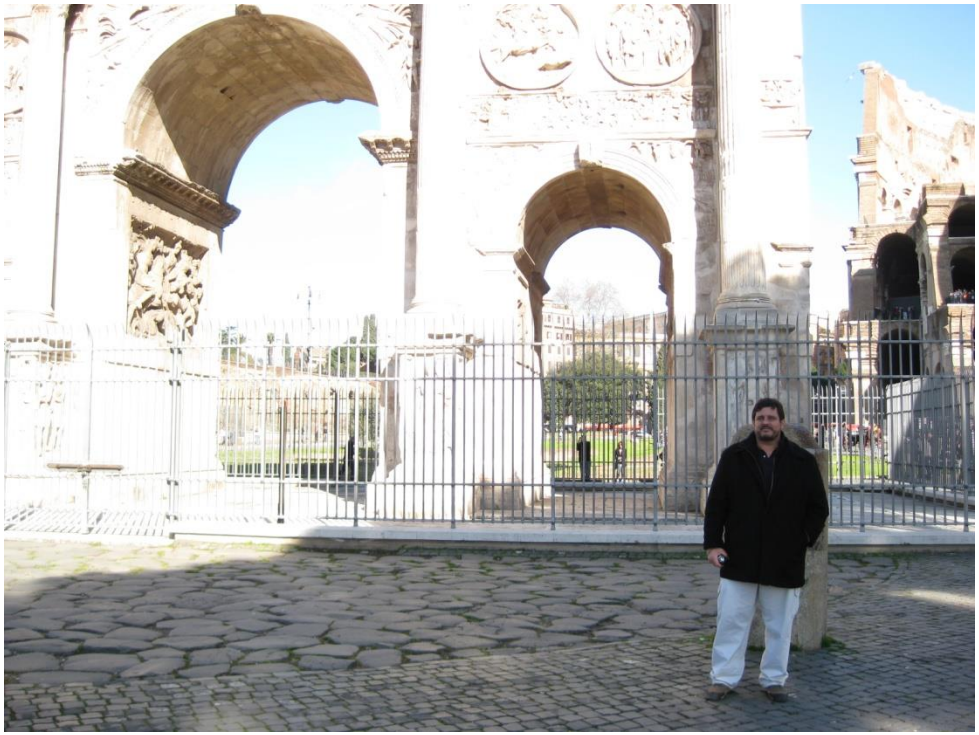
When related to a defined volume of space, a vertical plane can be the primary face of the space and give it a specific orientation. It can front the space and define a plane of entry into it. It can be a freestanding element within a space and divide the volume into two separate but related areas.



WALL PLANE



Arch of Septimius Severus, Rome, A.D. 203

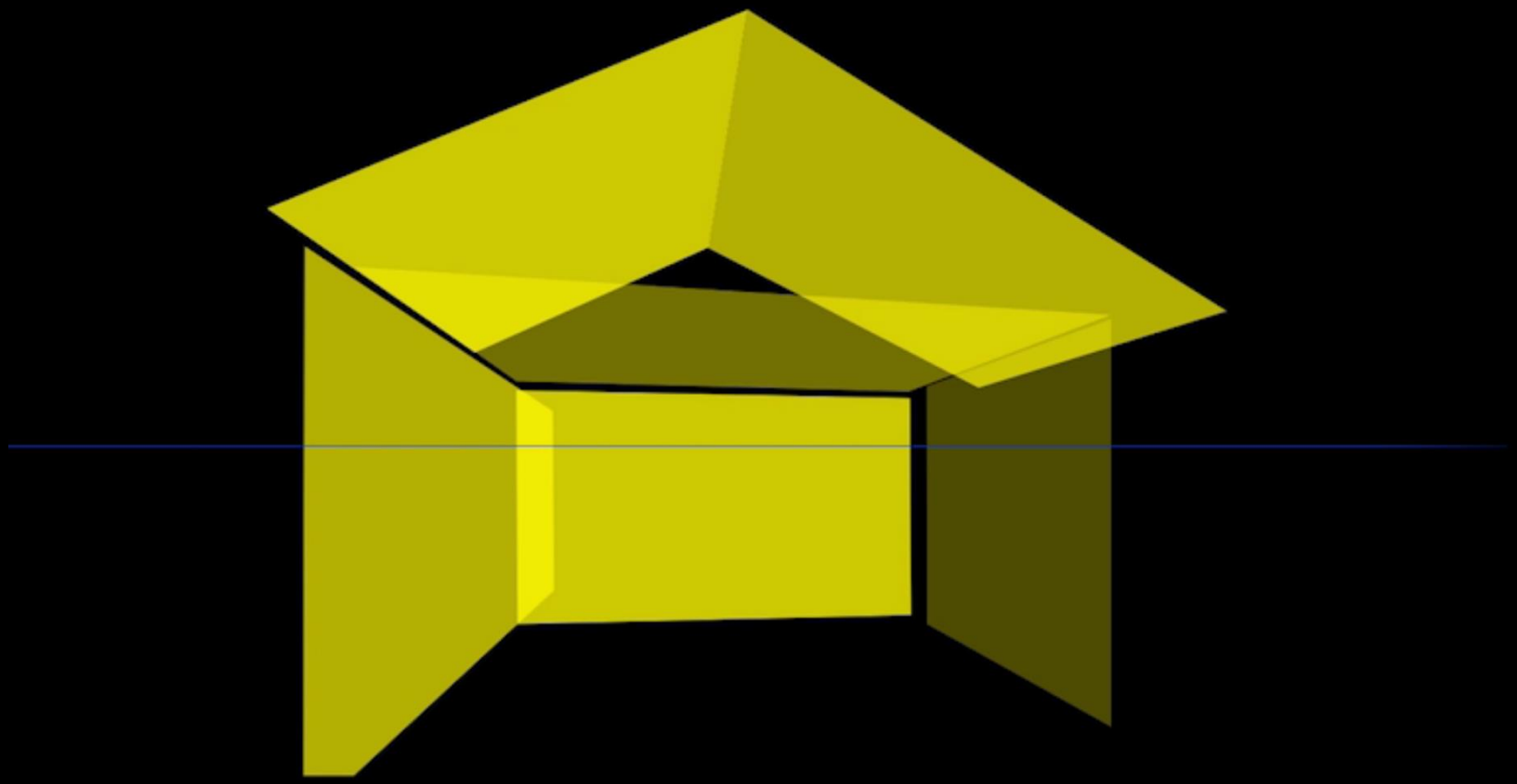


Rome 2011

A single vertical plane can define the principal facade of a building fronting a public space, establish a gateway through which one passes, as well as articulate spatial zones within a larger volume.

WALL PLANE

“The WALL PLANE is active in our normal field of vision and vital to shaping and enclosing space [1] ”

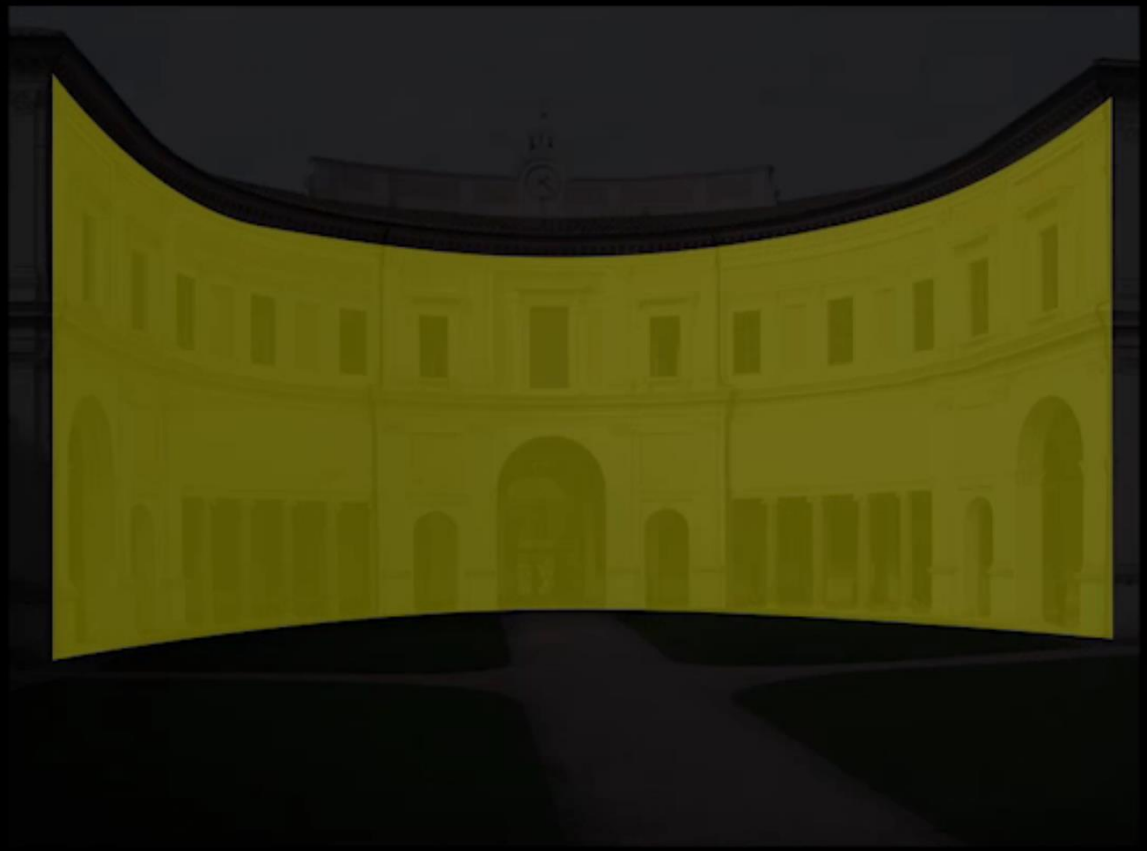


WALL PLANE

“Exterior walls mold interior space … they simultaneously shape exterior space and describe form, massing, and image of a building in space” [1]

WALL PLANE

“Exterior walls mold interior space” [1]



Belgium 2014

WALL PLANE

Belgium 2014

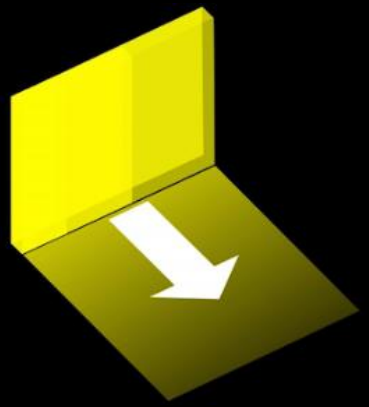

Belgium 2014

DEFINING SPACE

“Vertical forms have greater presence in defining space and sense of enclosure… a plane has qualities different from a column

… as a column becomes more like a wall, it can be a fragment of an infinite plane slicing through space

The plane can establish only a single edge of a field … to define 3D space, plane must interact with other elements” [1]



WALL PLANE

“can be a passive or receding backdrop” [1]

https://twitter.com/yaleartgallery/status/936273246034460672

“can assert itself as an active element by virtue of its form, color, texture, or material” [1]

Concert Hall by Mies van der Rohe, 1942

WALL PLANE

“can assert itself” [1]

An **Accent Wall**

https://www.thespruce.com/living-room-accent-walls-4135943

WALL PLANE

“can assert itself” [1]

An **Accent Wall**

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WALL PLANE

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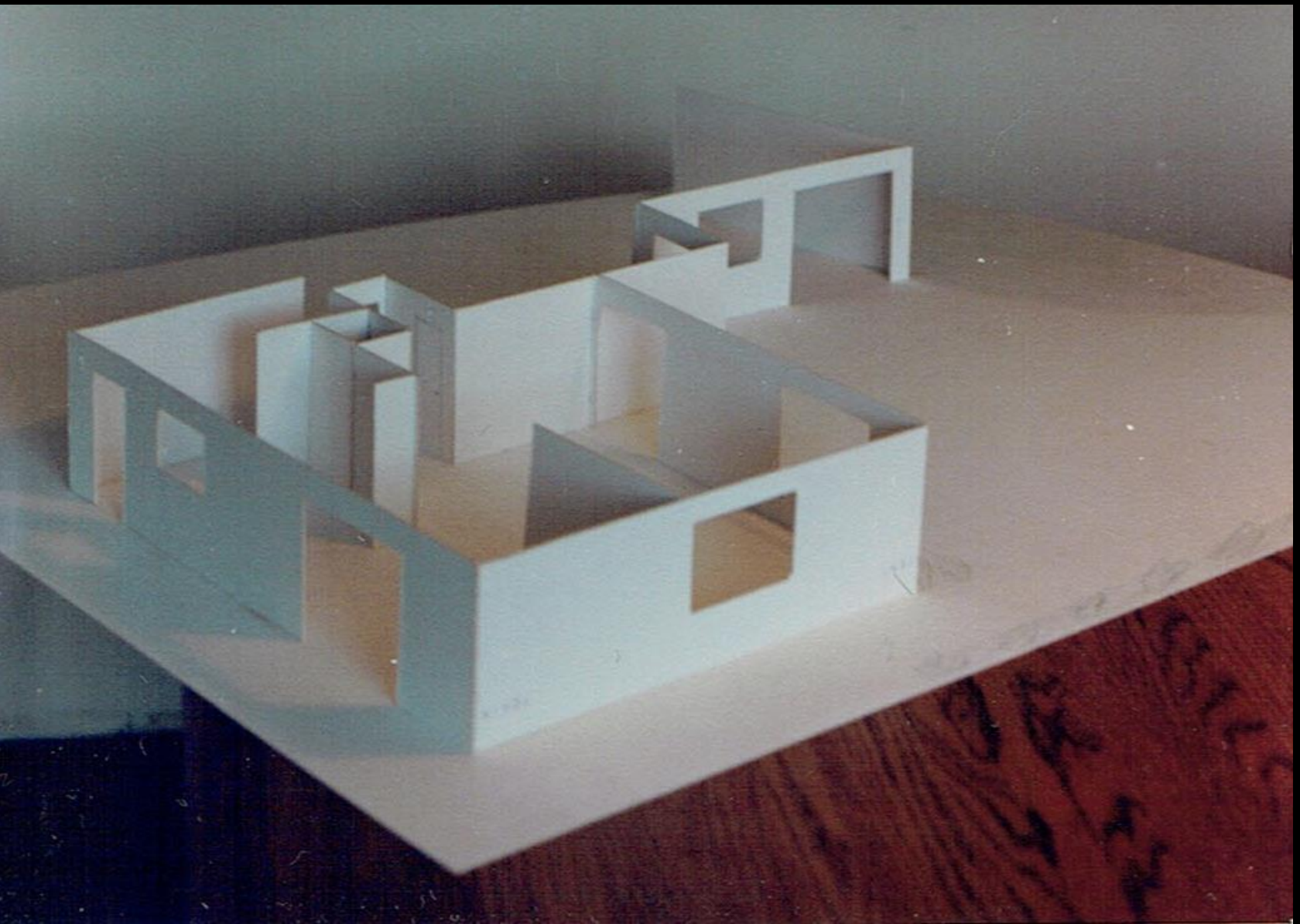
WALL PLANE

J Wunderlich1987
A&E Designer / Builder
Calivita Residence
San Diego, California

WALL PLANE

J Wunderlich1987
San Diego



WALL PLANE

J Wunderlich1987

San Diego


WALL PLANE
J Wunderlich1987
San Diego
STANLEY


WALL PLANE
J Wunderlich1987
San Diego

WALL PLANE

J Wunderlich1987
San Diego

WALL PLANE

J Wunderlich1987

WALL PLANE

J Wunderlich1987

WALL PLANE

J Wunderlich1987
San Diego

WALL PLANE

J Wunderlich1987
San Diego

WALL PLANE

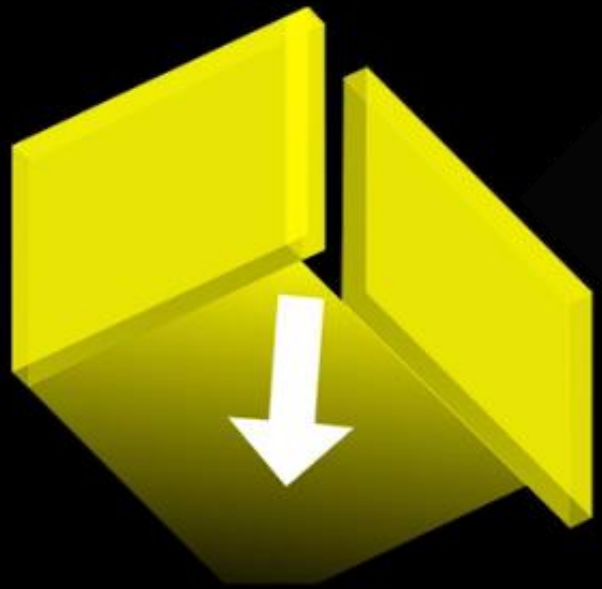
J Wunderlich1987
San Diego

Also work in kitchen and bedrooms

DEFINING SPACE

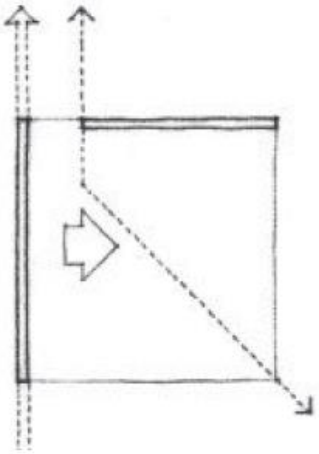
“L-shaped planes generates space from corner outward on diagonal axis .. the enclosed introverted field at the interior corner becomes extroverted along its outer edges

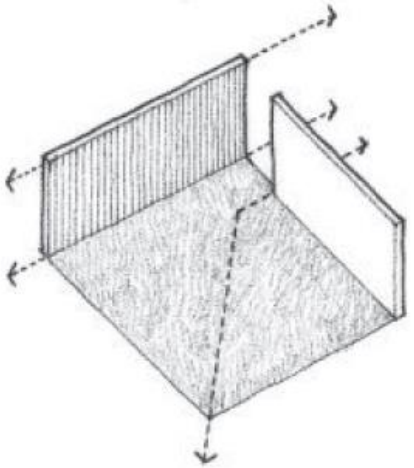
One of the arms can incorporate the corner while the other is seen as an appendage” [1]



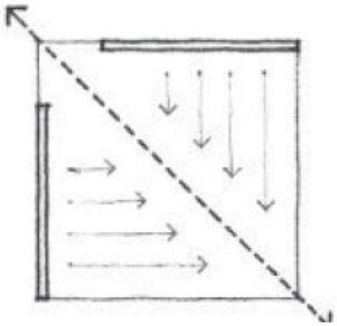
DEFINING SPACE

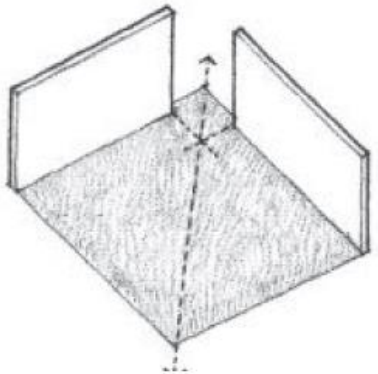
If a void is introduced to one side of the corner of the configuration, the definition of the field will be weakened. The two planes will be isolated from each other and one will appear to slide by and visually dominate the other.





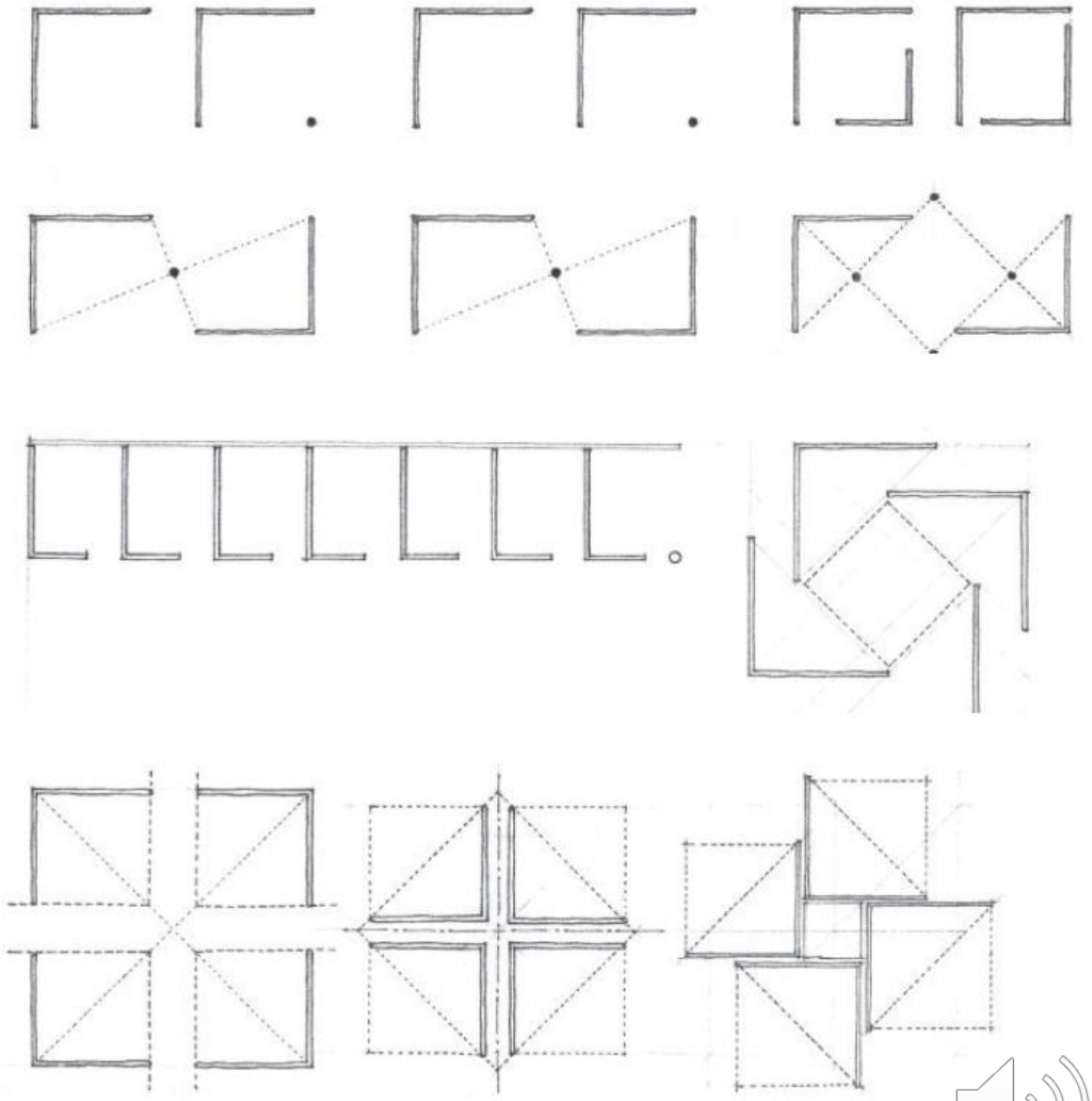
If neither plane extends to the corner, the field will become more dynamic and organize itself along the diagonal of the configuration.





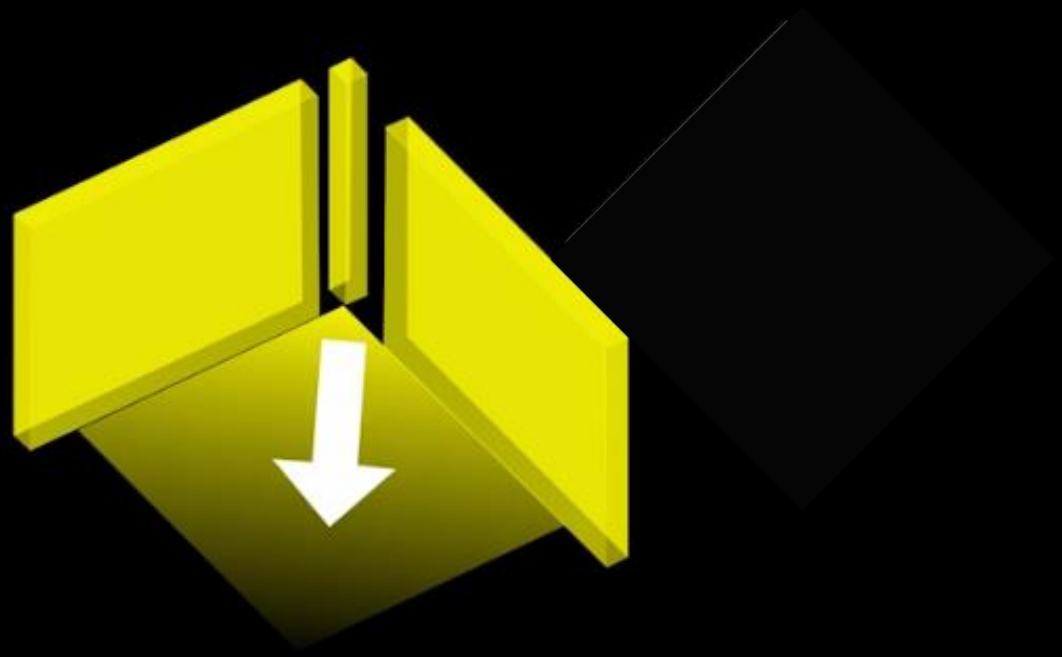
DEFINING SPACE

L-shaped configurations of planes are stable and self-supporting and can stand alone in space. Because they are open-ended, they are flexible space-defining elements. They can be used in combination with one another or with other elements of form to define a rich variety of spaces.



DEFINING SPACE

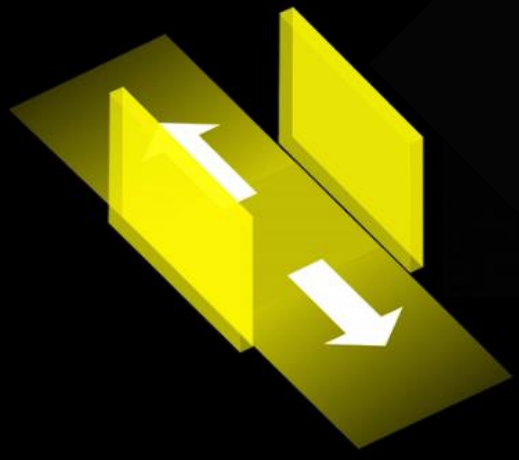
“The corner can be an independent element that joins two planes” [1]



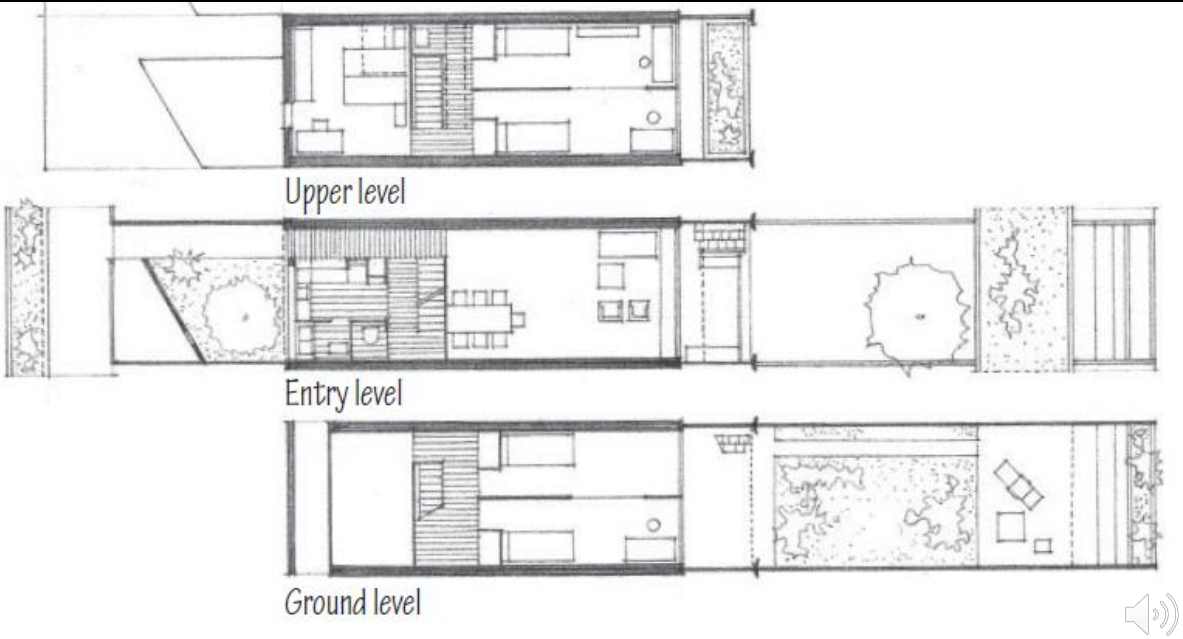
DEFINING SPACE

"Two parallel planes define a space oriented axially

... direction and flow is manifested for circulation and movement ... streets of towns, galleries and halls of buildings

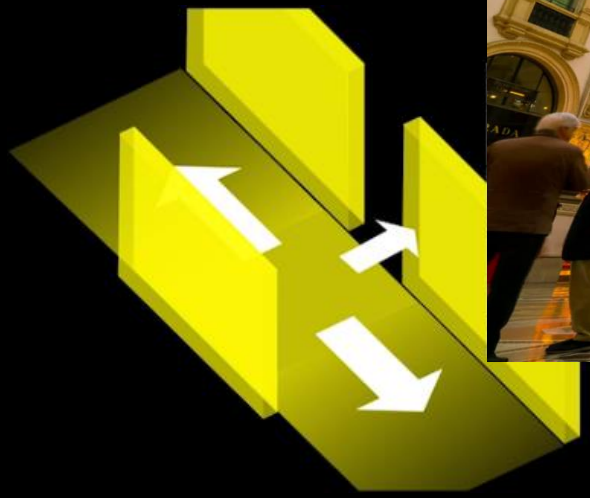


Parallel bearing walls are often used in multifamily housing developments. They not only provide structural support for the floors and roofs of each housing unit, but also serve to isolate the units from one another, curb the passage of sound, and check the spread of fire. The pattern of parallel bearing walls is particularly appropriate for rowhousing and townhouse schemes where each unit is provided with two orientations.



DEFINING SPACE

...openings introduce secondary axis's and modulate direction"[1]



Galleria Vittorio Emanuelle II, Milan Italy

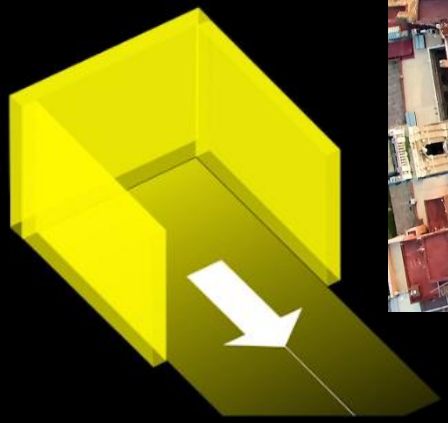
https://www.videoblocks.com/video/milan-italy---sep-28-2017-time-lapse-of-people-in-galleria-vittorio-emanuele-ii-milan-italy-it-is-italy-oldest-mall-in-milan-galleria-is-named

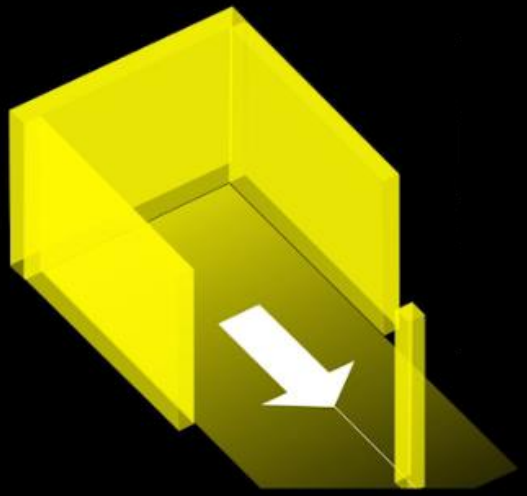
DEFINING SPACE

"U-shape defines space with inward focus and outward orientation … the open end affords visual and spatial continuity with adjoining space

…U-shapes capture and define outdoor space

…when element placed at open end, it gives field a point of focus and a greater sense of closure"[1]





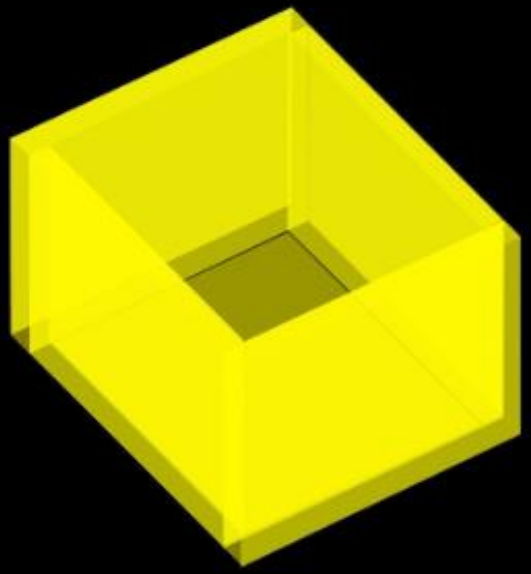
Piazza Del Campidoglio, Rome , 1544, Michelangelo

https://www.teggelaar.com/en/rome-day-3-continuation-6/

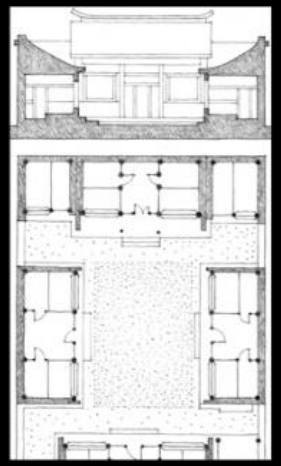
Paris 1992

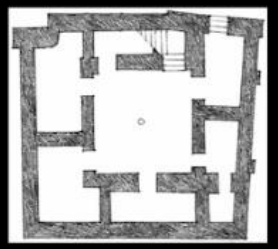
DEFINING SPACE

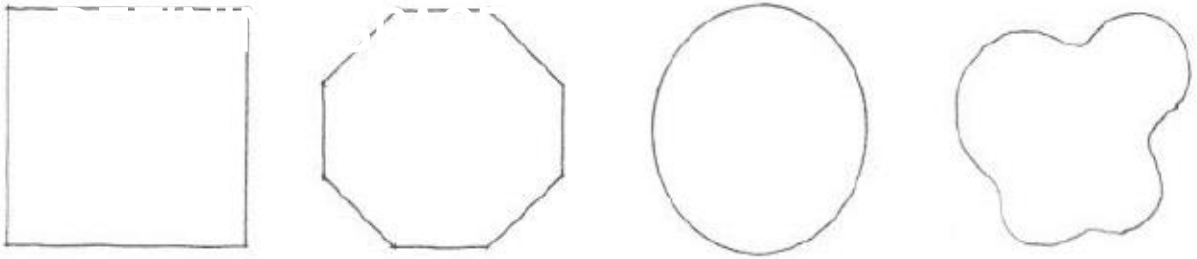
“Four planes encompassing space is the strongest spacial definition in architecture …
…because field is completely enclosed, space is naturally introverted

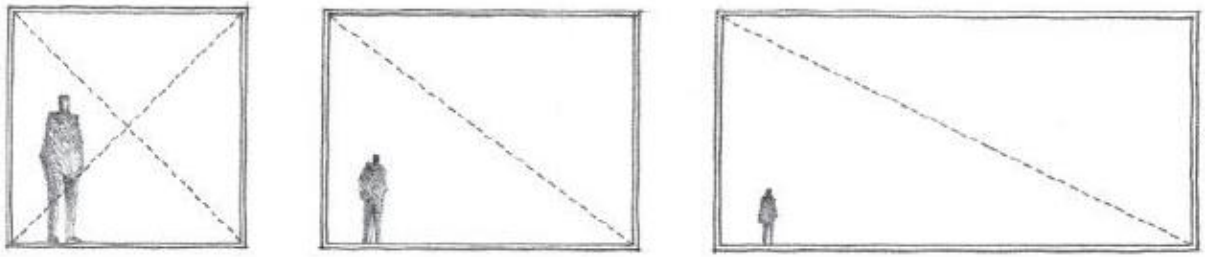


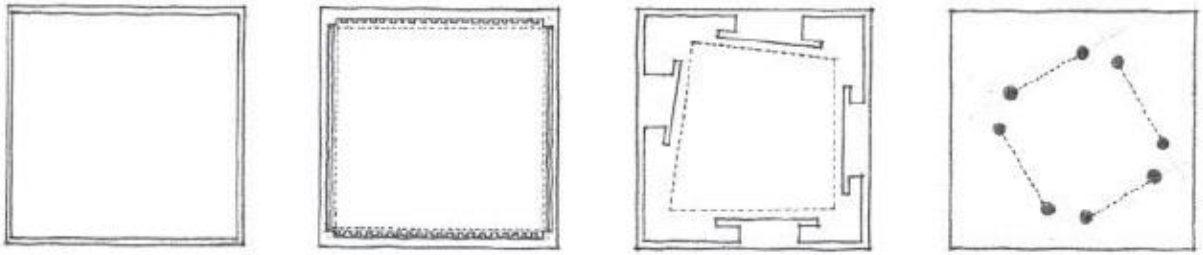
…well defined enclosed fields of space can be found in architecture at various scales … from a large urban square, to a courtyard or atrium, to a single hall or room” [1]

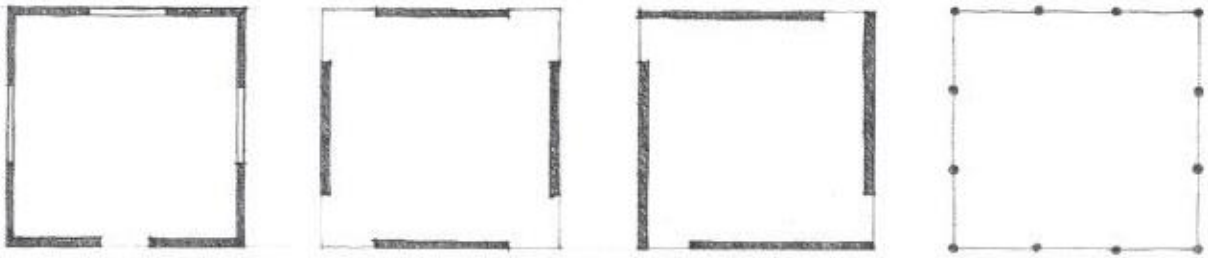












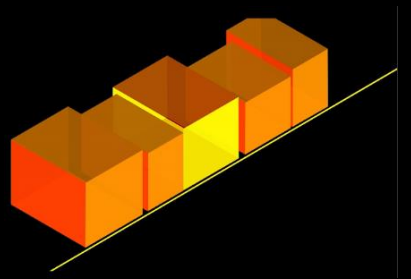
Properties of Enclosure	Qualities of Space
• Shape	• Form
• Surface	• Color
• Edges	• Texture
	• Pattern
	• Sound
• Dimensions	• Proportion
	• Scale
• Configuration	• Definition
• Openings	• Degree of enclosure
	• View or outlook
	• Light

URBAN DESIGN

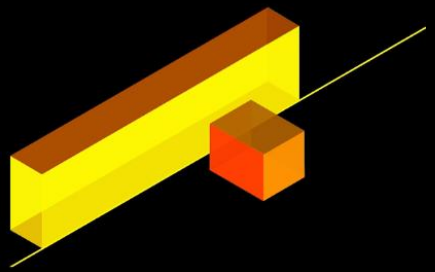
“The form of a building both impacts, and is influenced by, the nature of its site and context ” [1]

“Buildings respond to structural, topographical, and spatial conditions

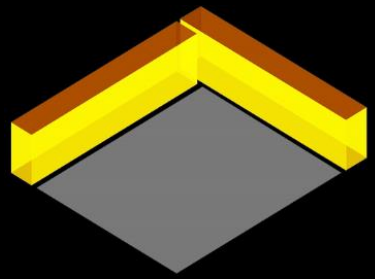
At an **URBAN SCALE**, *a building can continue the existing fabric of a place*



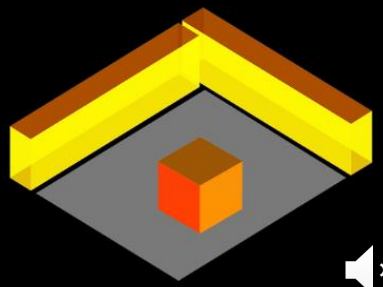
… form backdrop for other buildings



… define positive urban space

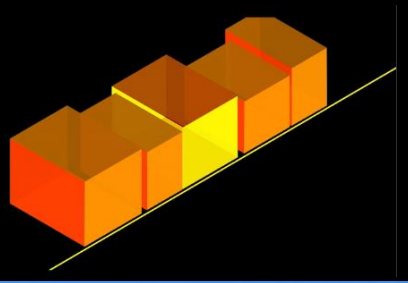


… or stand free as a significant object in space” [1]



URBAN DESIGN

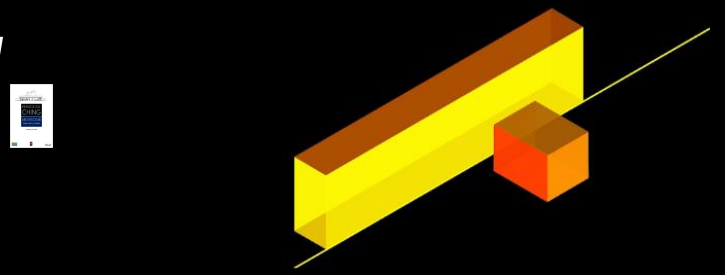
“continue existing fabric” [1]

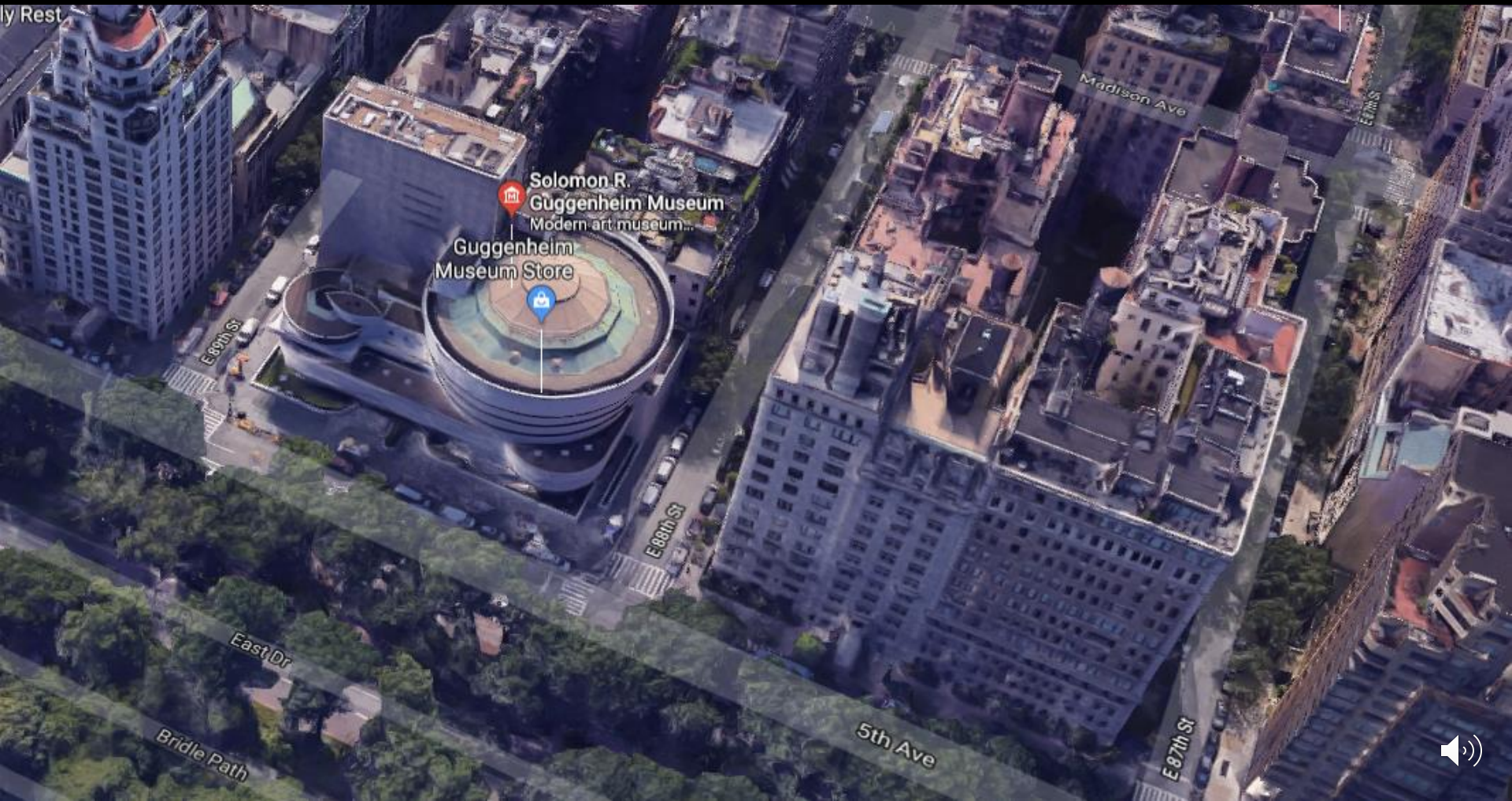


https://www.housingwire.com/articles/43818-san-francisco-definition-of-low-income-is-shocking

URBAN DESIGN

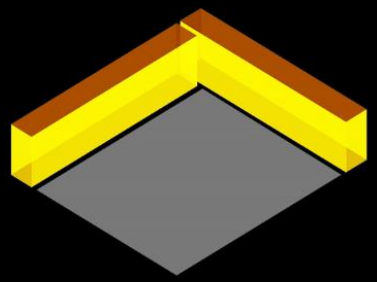
“form a backdrop for other buildings” [1]





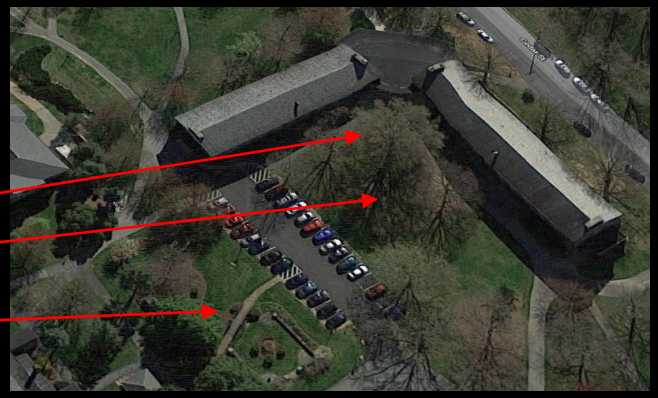
URBAN DESIGN

“define space” [1]

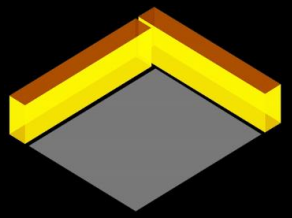


URBAN DESIGN

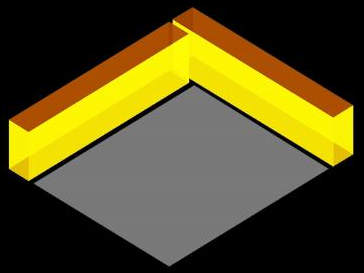
This could be a much more well-defined space if parking lot removed, and if terrace at dorms, and the nice wooded area, and the ornamental garden behind Alpha Hall, were connected



Elizabethtown College Dorms



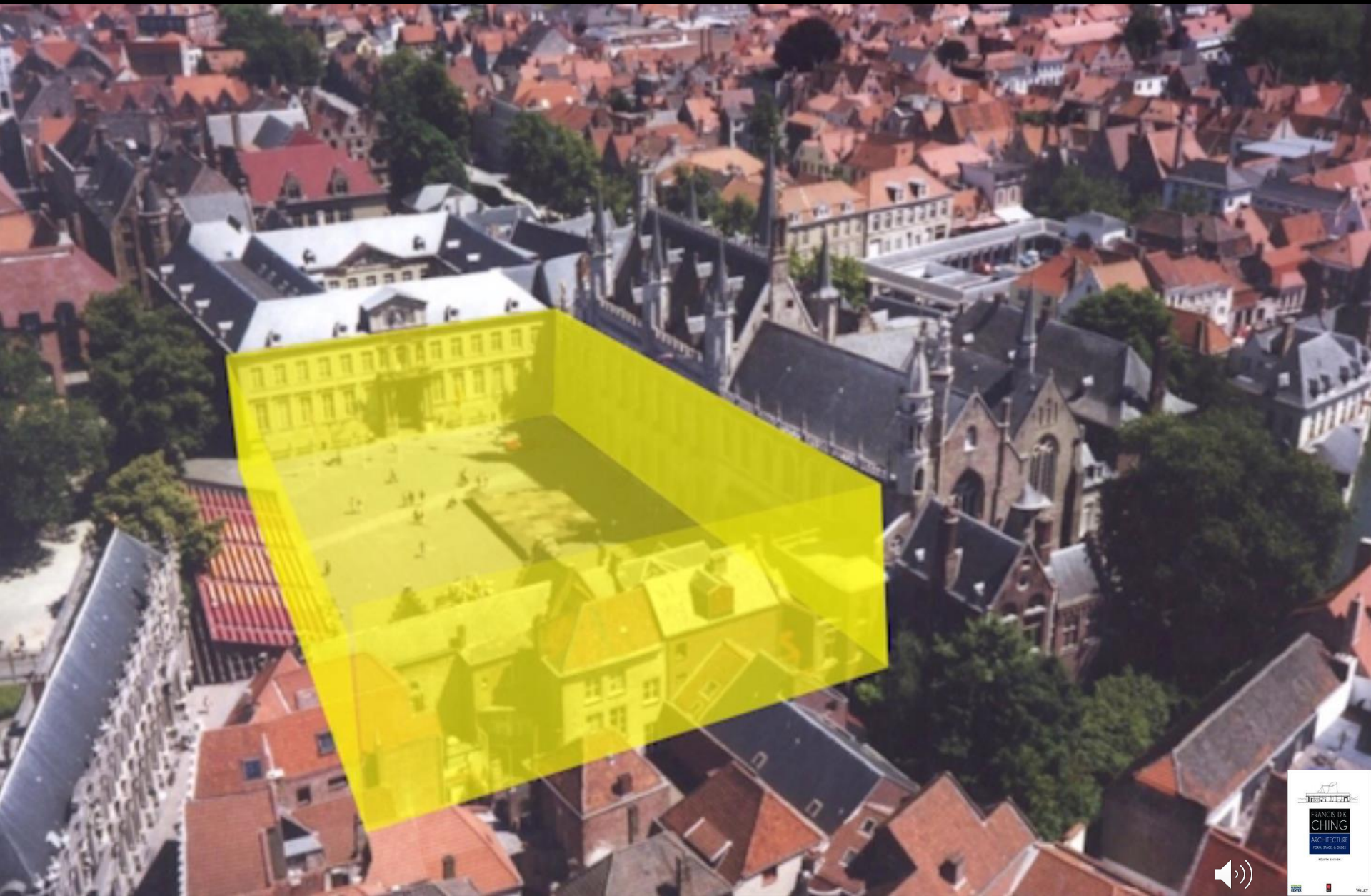
URBAN DESIGN



*"Façades serve as walls that define courtyards, streets, and public gathering places like squares (**PIAZZA's**) and marketplaces"* [1]

URBAN DESIGN, PIAZZA

*"At the urban scale, buildings may serve as containers that can be read as **MASSES that DEFINE VOLUMES of SPACE"*** [1]




PIAZZA
Venice, 2008,2011,2014,2017

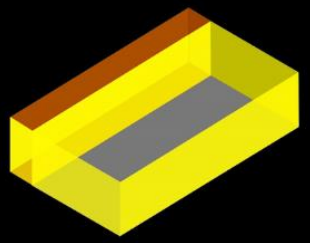

PIAZZA
Venice, 2008,2011,2014,2017
Venice


PIAZZA
Venice, 2008,2011,2014,2017

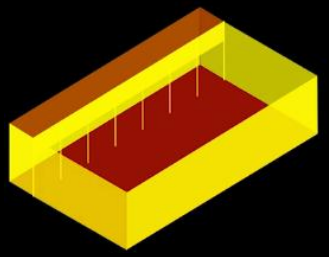
BUILDING DESIGN

"At the **SCALE OF THE BUILDING SITE**, *a building can:*

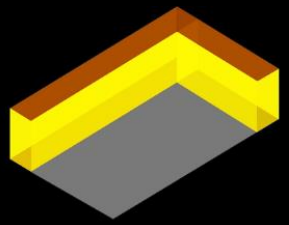
Form a wall along an edge of site to define outdoor space



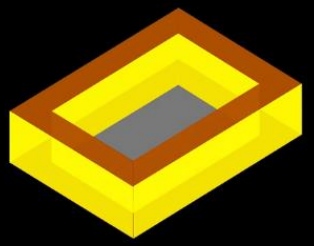
Merge interior space with private outdoor space of walled site



Enclose a portion of site as an outdoor room

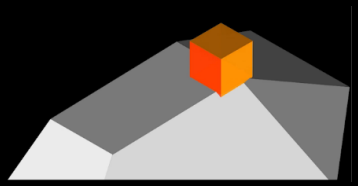


Surround and enclose a courtyard or atrium space" [1]

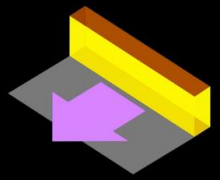


"At the **SCALE OF THE BUILDING SITE**, *a building can:*

Dominate site through its form and positioning

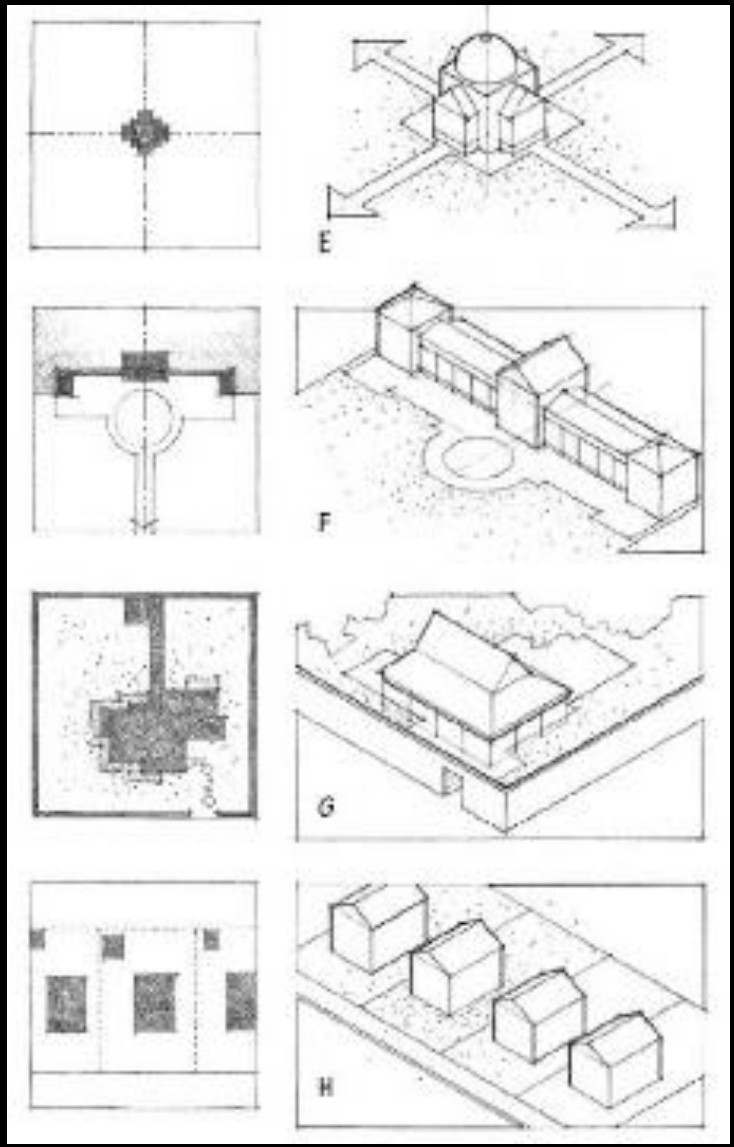


Stretch out and present a broad face to address a view



Stand free, but extend its interior spaces to merge with private exterior spaces

Stand as a positive form in negative space" [1]



BUILDING DESIGN

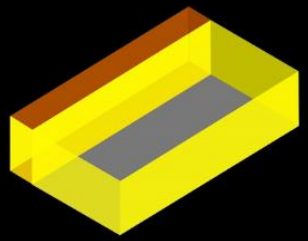
“A wall can define an outdoor space” [1]

http://www.traditionalhome.com/garden-outdoor-living/english-garden-alabama

BUILDING DESIGN

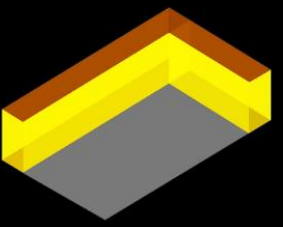
“Walls along edges of site define an outdoor space” [1]

https://www.pinterest.com/pin/79657487135442326/



BUILDING DESIGN

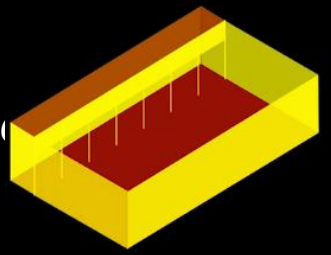
“A building can enclose a portion of site as an outdoor room” [1]



https://nyspacesmagazine.com/67-inspirational-l-shaped-house-designs-ny/

BUILDING DESIGN

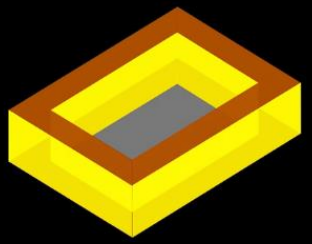
"A building can merge interior space with private outdoor space of a walled site" [1]



https://www.hgtv.com/remodel/outdoors/10-pool-deck-and-patio-designs-pictures

BUILDING DESIGN

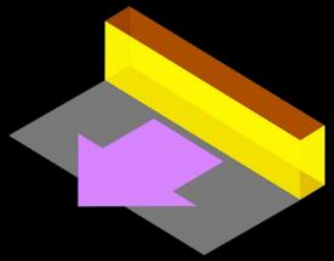
"A building can enclose a courtyard or atrium space" [1]

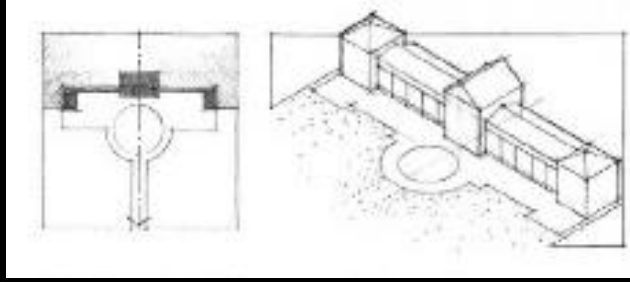


Padua Italy, 2011, 2014

BUILDING DESIGN

“A building can stretch out and present a broad face to address a view” [1]



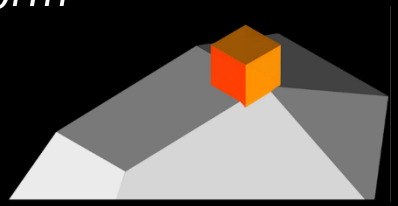


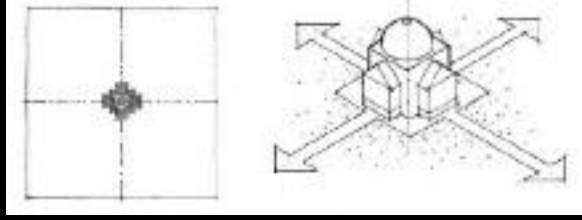
https://www.thercs.co.uk/

“Crescent” buildings in England

BUILDING DESIGN

"A building can dominate site through form and topographical positioning" [1]



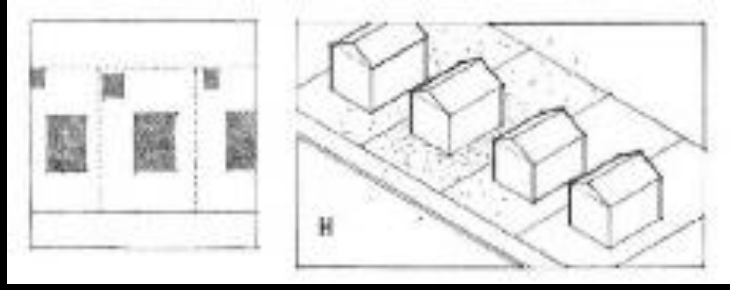


https://home.monticello.org/

Thomas Jefferson's "Monticello" home in Virginia

BUILDING DESIGN

"A building can stand as a positive form in a negative space" [1]



https://www.lct.org/explore/blog/notes-levittown/

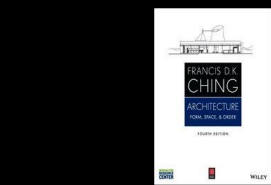
Levittown in Pennsylvania

PARALLEL PLANES

“Ceiling and floor can define a spatial zone without walls” [1]

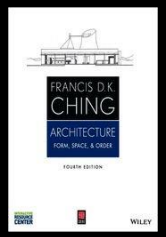
PARALLEL PLANES

“a spatial zone without walls” [1]

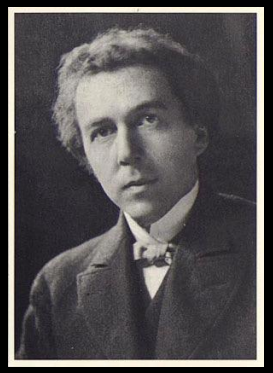


PARALLEL PLANES

"The reinforced concrete slabs of "Falling Water" (1936 in Mill Run PA) *by Frank Lloyd Wright express the horizontality of the floor and roof planes as they cantilever outward from the central vertical core"*



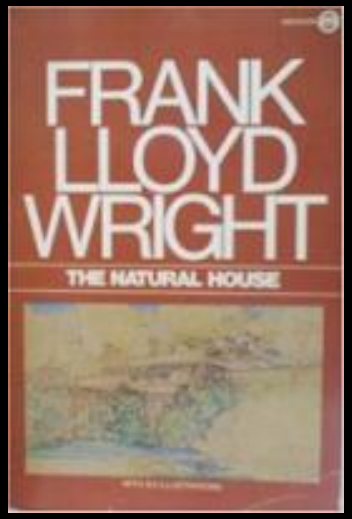
PARALLEL HORIZONTAL PLANES



Frank Lloyd Wright
1867-1958

"I had an idea that the Planes Parallel to the earth in buildings identify themselves with the ground... I began to see a building as broad shelter in the open, related to Vista, vista without and vista within

... I was born an American child of the ground and space, welcoming spaciousness as a modern human need... The farm had no negligible share in developing this sense of things in me; I am sure."



Photograph by other


Photograph by other

Photograph by other

PARALLEL PLANES

2015 Field Trip to “Falling Water”

PARALLEL PLANES

2015 Field Trip to “Falling Water”

PARALLEL PLANES

2015 Field Trip to “Falling Water”

PARALLEL PLANES

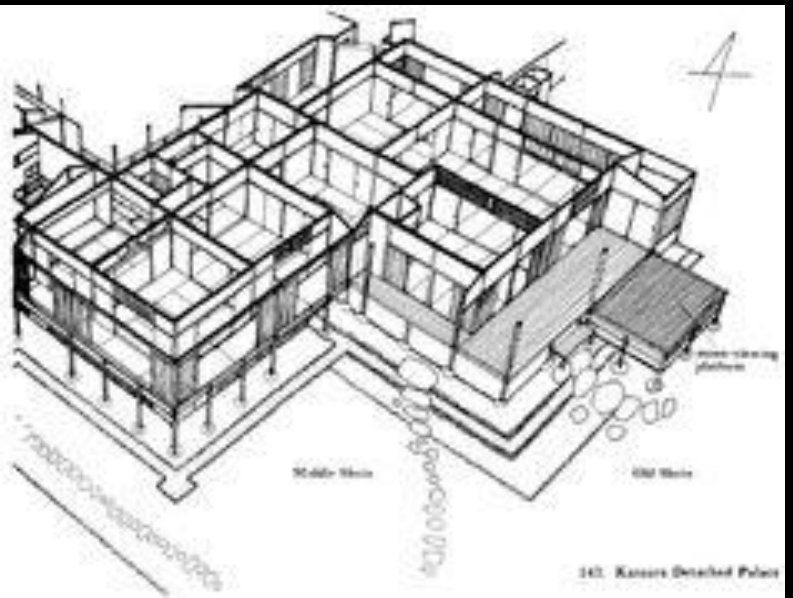
2015 Field Trip to “Falling Water”

PARALLEL PLANES

2015 Field Trip to “Falling Water”

PERCEIVED VOLUME

"Katsora Imperial Villa, Kyoto Japan, 17th century, columns and beams form a three-dimensional framework for architectural space" [1]



PERCEIVED VOLUME

PERCEIVED VOLUME

J Wunderlich 2000
A&E Designer / Builder
Lancaster County, Pennsylvania

PERCEIVED VOLUME

J Wunderlich 2000

Pennsylvania

PERCEIVED VOLUME

J Wunderlich 2000

Pennsylvania


J Wunderlich 2000
Pennsylvania

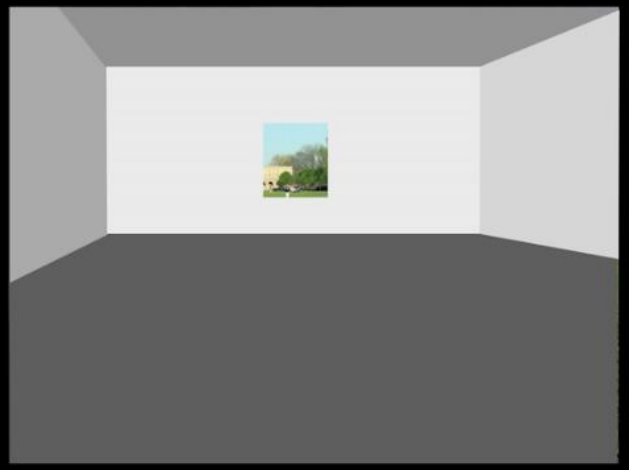

PERCEIVED VOLUME
J Wunderlich 2000
Pennsylvania


PERCEIVED VOLUME
J Wunderlich 2000
Pennsylvania

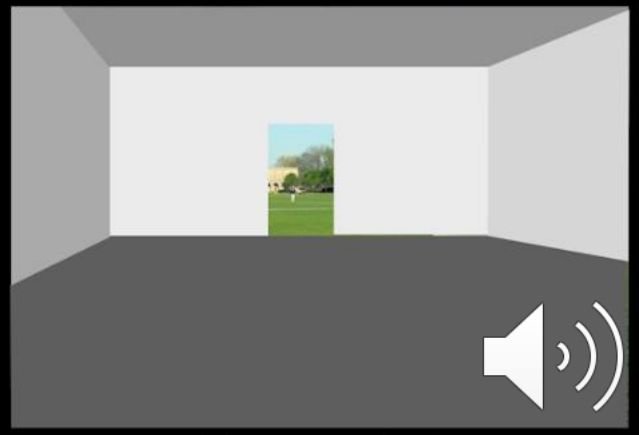
OPENINGS

“openings connect space to its context

Windows allow daylight to penetrate and illuminate, offer views, establish relationships with adjacent spaces, and provide ventilation

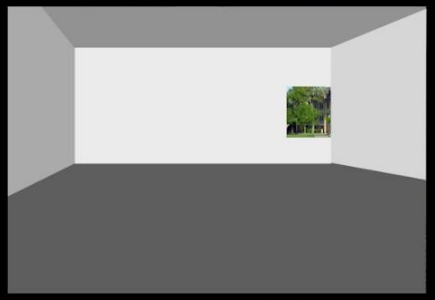


*Doorways offer entry and influence patterns of movement within”**[1]***

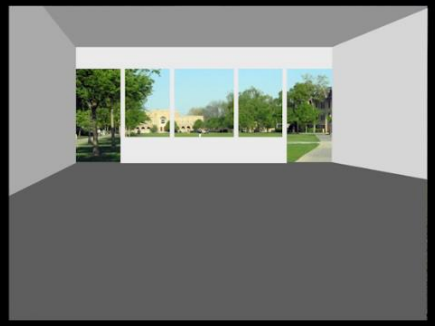


OPENINGS

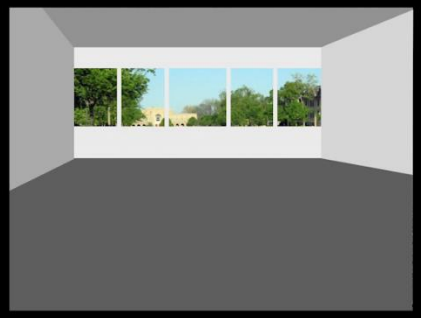
"Openings within a plane don't weaken edge, or sense of enclosure



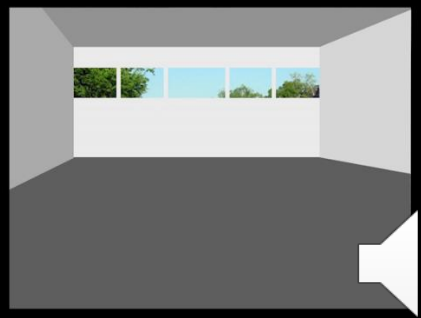
Multiple openings may form a unified composition, or be staggered or dispersed to create visual movement along the plane



As an opening increases in size, it will at some point cease to be a figure within an enclosing field, and become an element in itself



*A horizontal opening extended across a wall begins to visually lift the ceiling plane from the wall planes and give it a feeling of lightness" **[1]***



OPENINGS

J Wunderlich 2000

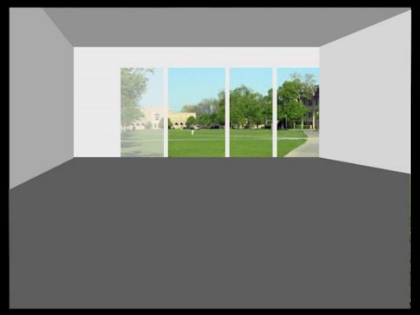
Pennsylvania

Window Bands

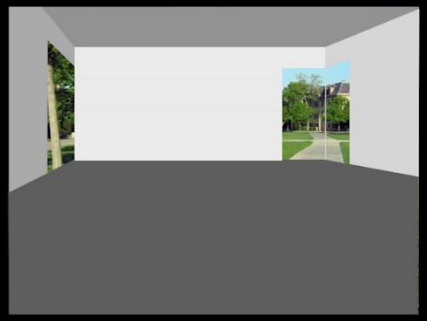
- as unique elements

OPENINGS

"A window-wall allows more daylight and views, and visually expands space beyond physical boundaries



Openings along edges visually weaken corners… as openings increase, space looses it's sense of enclosure and begins to merge with the adjacent spaces



Locating a skylight along edge where wall and ceiling planes meet allows daylight to wash the surface of the wall, illuminate it, and enhance the brightness of the space

*Combining a window wall with a large skylight obscures the boundaries between inside and outside…and the building looses its sense of enclosure" **[1]***

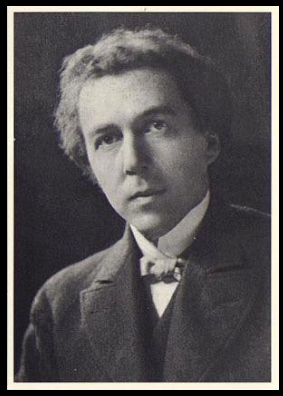
OPENINGS

“As wall openings increase in size, views become part of the spatial experience” [1]

The Japanese **ENGAWA** (a veranda, an enclosed porch).

VIDEO: https://www.youtube.com/watch?v=R1EFyca7MHQ

OPENINGS



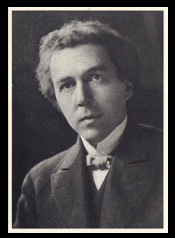
Frank Lloyd Wright would often say *“Destroy the Box”* when referring to opening up spaces

… by removing typical walls between rooms

and opening up inside to the outside with large picture windows, cascades of windows, and corner windows

OPENINGS

“opening inside to outside with corner windows”

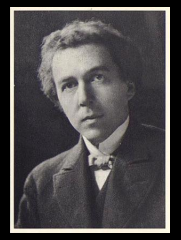


Falling Water, Mill Run Pennsylvania, 1936 by Frank Lloyd Wright

https://commons.wikimedia.org/wiki/File:Frank_Lloyd_Wright_-_Fallingwater_interior_2.JPG

OPENINGS

“opening inside to outside with corner windows”



http://archive.boston.com/travel/getaways/us_articles/2009/04/19/wrights_fallingwater_appeals_to_many_senses/

Falling Water, Mill Run PA, 1936 by Frank Lloyd Wright

OPENINGS

J Wunderlich 2000++

Pennsylvania

Corner Window, to open up Interior to Exterior

LIGHT

"Light reveals shape, colors, and textures

With shifting patterns of light, shade, and shadows, sunlight articulates forms

The Sun animates a space

The color and brilliance of sunlight can create a festive atmosphere

A room full of more diffuse daylight can be somber" [1]

LIGHT

"Direct sunlight creates sharp patterns of light and dark on surfaces, and crisply articulates forms

The shape of an opening is reflected in the cast shadow pattern on forms and surfaces

The color and texture of forms and surfaces affect the reflectivity and ambient light level within the space" [1]

LIGHT

“Detrimental effects of direct sunlight such as glare and excessive heat gain can be controlled by shading devices

Glare created if excessive contrast between brightness of openings, and darker surrounding surfaces” [1]

LIGHT

“Even though forms may be hidden from, or out of view, their shadows can reveal their shape

The quality of direct sunlight or diffuse daylight varies with time of day, season, and place

… as sunlight is disbursed by clouds, haze, and precipitation, it transmits the changing colors of the sky and the weather, to the forms and surfaces it illuminates”

[1]

LIGHT

"Wall openings allow passage of light, heat, and sound.
As they increase in size, they play a role in natural sense of closure" [1]

Rome 2011

LIGHT

J Wunderlich1990
A&E Designer / Builder
Strafford, Pennsylvania

VIEW

“Window and skylights establish a relationship between a room and it's surroundings” [1]

VIEW

“Windows and skylights establish relationship between room and surroundings

Small opening can reveal close-up detail, or frame view so we see it as a painting on a wall

Group of windows can fragment a scene and encourage movement within space

Long narrow opening can hint at what lies beyond”

[1]

VIEW

“As opening expands, it opens room up to a broad vista; The large scene can dominate a space or serve as a backdrop for activities within

Window located so a specific view can be seen from only one position

*Bay window can project a person into a scene. If large enough, projected space can become an alcove able to be occupied” **[1]***

Windows positioned to frame views

J Wunderlich 2000++
Pennsylvania


VIEW
J Wunderlich 2000++
Pennsylvania
Windows
positioned to
frame views

J Wunderlich 2000++

Pennsylvania

Opening can be like a painting on a wall

VIEW

J Wunderlich 2000++

Pennsylvania

Opening can be like a painting on a wall

VIEW

Opening can be like a painting on a wall

J Wunderlich 2000++

Pennsylvania

VIEW

J Wunderlich 2000++
Pennsylvania

Opening can be like a painting on a wall

VIEW

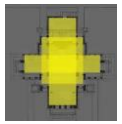
1) Surf google images for a large window ("Great-Window") that you imagine looks out at a great view that you also find online, OR make sketches of what you imagine for a great window and view.

2) CREATE A MODEL:
   - ART370's: Using the two sheets of balsawood and the one thin stick of balsawood supplied to you, and any other materials you can obtain on your own (including from surplus in class), create a 1/4"=1'-0" or 1/8"=1'-0" scale model of a house designed around your large window looking at your great view. Your model must have the window built with great detail including using the thin stick of wood supplied to you. And you must have at least the front door as another opening, and you must create a nicely designed roof with overhangs on all sides.
   - ART/EGR499B's: Create a computer model using Minecraft, Google sketchup, or Revit, of a house designed around your large window looking at your great view. Your model must have the Great-Window, the front door, at least two more openings, and a nicely designed roof with overhangs on all sides.

ORGANIC ARCHITECTURE DESIGN PRINCIPLES

Frank Lloyd Wright

* = IN THIS LECTURE



* CONFORM TO SITE, sun, topography, environment
* PINWHEELED PLANES -- CRUCIFORM
  * PRAIRIE-SCHOOL , BROAD CENTRAL CHIMNEY, LONG CANTILEVERS (overhangs & balconies)
* FOLDED PLANE like origami …continuity…walls, ceilings, and floors become one

SIMPLE GEOMETRIES
* HUMAN SCALE
* OPEN FLOOR PLAN

FROEBEL BLOCKS

UNITARIAN MOTHER Teacher

Japanese Buddhism & Shintoism, with some roots in Chinese Philosophy

  * DESTROY BOX, no Victorian box-type rooms, – FLOW between rooms, and inside/outside
  * Walls become screens, BANDS of WINDOWS, FRAME VIEWS – like ENGAWA

Use MATERIALS IN NATURAL STATE -- same on exterior and interior

* FORM and FUNCTON are one! Harmony, *not one following other, secondarily*
* A UNIFIED WHOLE - inside and out - ORCHESTRATE SUN

BRING NATURE OUT OF MATERIALS, but Innovate (Textile Blocks, Modular "Ken" Design, etc.)

* STRUCTURAL ART like in Nature (e.g., the veins in Leaves) - Interior space made exterior as architecture

SOFT WARM OPTIMISTIC COLOR TONES of earth, and autumn leaves

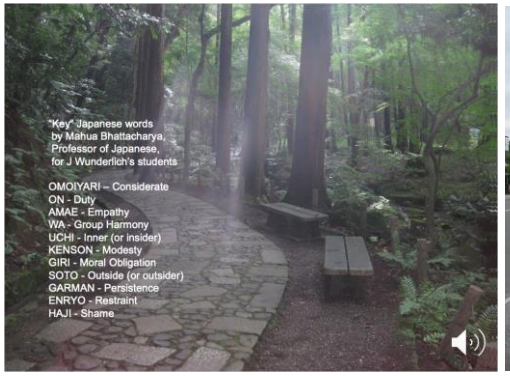
ASSIMILATE FIXTURES into structure, BUILT-IN FURNITURE ..... many plants & planters

ARCHITECTURE = MUSIC

Arts & Crafts, Italy, JAPAN

MUSICIAN Preacher FATHER

ARCHITECT MENTOR Louis Sullivan



NOTE: COMPRESSION & RELEASE is not Organic Design, but commonly used by FLW to cramp/hide entries so as to magnify destination Architecture

PART 1: Frank Lloyd Wright Age 0-19 (1867-1886) PDF PPTX-w/audio MP4 YouTube

Context: Post Civil War recession. Industrial Revolution. Farm life. Preacher/Musician-Father, Teacher-Mother. Mother's large influential Unitarian family of Welsh farmers. Nature. Parent's divorce.

Architecture: Froebel schooling (e.g., blocks). Barns/farm-houses (PDF PPTX-w/audio MP4 YouTube). Organic Architecture roots.

PART 2: Frank Lloyd Wright Age 20-33 (1887-1900) PDF PPTX-w/audio MP4 YouTube

Context: Rebuilding Chicago after the Great Fire. Wife Catherine and first five children.

Architecture: Architects Joseph Silsbee and Louis Sullivan. Oak Park. Home & Studio. "Organic Architecture" begins.

PART 3: Frank Lloyd Wright Age 34-41 (1901-1908) PDF PPTX-w/audio MP4 YouTube

Context: First Japan trip (PDF PPTX-w/audio MP4 YouTube). Arts & Crafts movements. Six children.

Architecture: Prairie Style. Oak Park & River Forest, Unity Temple, Robie House, Larkin Building.

PART 4: Frank Lloyd Wright Age 42-47 (1909-1914) PDF PPTX-w/audio MP4 YouTube

Context: Secession movement. Lived in Italy (Page MP4 YouTube). Built Taliesin on family farmland. Mistress murdered.

Architecture: Wasmuth Portfolio published(Germany).Taliesin. Many operable windows for health & passive cooling. Sculptures.

PART 5: Frank Lloyd Wright Age 48-62 (1915-1929) PDF PPTX-w/audio MP4 YouTube

Context: WWI, Roaring 20's. Short 2nd marriage. Lives 3 yrs in Japan, then California and Wisconsin. 3rd marriage (Olga).

Architecture: Tokyo Imperial Hotel. Textile Houses in California (with Mayan influences).

PART 6: Frank Lloyd Wright Age 63-78 (1930-1945) PDF PPTX-w/audio MP4 YouTube

Context: 1930's Great Depression. WWII. Taliesin Fellowship/school. Utopian-Ideals(communal-living) Winters in AZ.

Architecture: Broadacre City, Fallingwater, Johnson Wax Building, Taliesin-West, Hanna-Honecomb House, Usonian Homes.

PART 7: Frank Lloyd Wright Age 79-91 (1946-1958++) PDF MP4 PPTX-w/audio YouTube

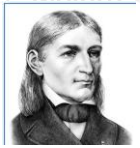
Context: Post-WWII boom. Cold War. Communal living at Taliesin. FLW dies in1959. Fellowship/school continued at Taliesin & Taliesin-West by Olga for 27 years -- and still exists today with some very recent changes (2020)

Architecture: Price Tower, Churches/Synagogue/Auditoriums. The Guggenheim. AZ homes, Modern materials.

FRANK LLOYD WRIGHT'S EARLIEST INFLUENCES

[FROEBEL 2013, PENN RARE BOOK 2014, HUXTABLE 2004, STORRER 2017, WRIGHT 1957, BURNS 2001]

- **FROEBEL** influenced by Taoism and Buddhism
  - Japanese Shinto rooted in Chinese Taoism
    - Shinto Gods in everything, especially **nature**
    - FLW would later love Japanese Art, Design, and Culture
- Mother's family were all **UNITARIANS**
  - Inspiration from all religions, love **nature**, God in everything



Friedrich Froebel
1782-1852 Germany

Maria **Montessori**
1913 in Italy

MOTHER

Homeschool Teacher
using Froebel System

Others in history homeschooled:
Leonardo da Vinci, Monet, Mozart, Bach, Newton, Ben Franklin, Edison, Jefferson, Washington, Einstein, Teddy and Franklin-Delano Roosevelt, Churchill, John Muir, and the Wright brothers

FATHER

Preacher, Lawyer, School Superintendent, Teacher, Musician
B.A., M.A. Colgate University

"Artist, photographer, and designer of furniture, graphics, books, and buildings, his patronage of Chinese and Japanese art, his obsession with every aspect of his surroundings, his dedicated collecting of beautiful things, owed much to his father" [Huxtable 2004]

Most of childhood in rural **WISCONSIN**

+ Like Pennsylvania farmland

Frank Lloyd Wright 1867-1959

Future Designers

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More on Wunderlich website and YouTube Channel:

ARCHITECTURE

STUDENT DESIGNS | DESIGN STUDIO | VIRTUAL REALITY

SELECT LECTURES:

2019 Architecture Theory Lecture series (PDF, PPT) | 2018 Frank Lloyd Wright Lecture series (PDF, PPT) | 2019 Frank Lloyd Wright 31 sites visited in Chicago-Land | 2013 Japanese Urban Design and Architecture (PDF, PPT) | 2018 Skeleton Beneath The Skin (PDF,PPT) | 2018 Lighting Design (PDF, PPT) | Skyscrapers (PDF, PPT)

COURSES (and Revit software tutorials)

FYS100 CONCEPTUAL ARCHITECTURE

- Architecture Theory intro; Mansions; Barns
- Architecture of JAPAN and ITALY
- FRANK LLOYD WRIGHT Ages: 0-19 (1867-86), 20-33, 34-41, 42-47, 48-62, 63-79, 79-91, V-Lecture of 31 Chicago Designs
- Assignments: 1 2 3 4 5 6 7 8 9 10 11 12

EGR353 GREEN ARCHITECTURAL ENGINEERING

- REVIT Lab1 and Lab2, "SWEETS" Catalog
- LEED Intro; LEED Project: Neighborhood Design(ND), Etown Master Plan, LEED Project2 Building(BD+C) or Interior(ID+C); LEED Trips: SFW Center and SFW 2
- LEED Checksheets: ND Plan, BD_C New Construct/MajorReno; ND Built ,BD_C Core&Shell, BD_C Schools, BD_C Retail, BD_C Data Centers, BD_C Warehouse/DistrCenter, BD_C Hospitality, BD_C Healthcare, BD_C Homes&MultifamilyLiveries, BD_C Multifamily Midrise, ID_C Commercial Interiors, ID_C Retail, ID_C Hospitality, O&M Existing Bldg, O&M Schools, O&M Retail O&M Data Centers O&M Hospitality O&M Warehouse/DistrCenter
- Lectures: ; CH3 Thermodynamics Concepts ; CH4 Comfort ; CH5&11 Climate&Site Design ; CH6 Solar Geometry ; CH7 PASSIVE Solar Heating ; CH8 Active Solar ; CH9,10 PASSIVE Cooling ; CH12,13,14 Daylighting and Illumination Engineering ; CH15 Building Envelope ; CH16 HVAC; Acoustics
- AIA Graphics Standards; Guest-Speakers; 2018 FINAL EXAM

ART378 ARCHITECTURAL DESIGN THEORY

- Lectures: PRIMARY ELEMENTS FORM FORM & SPACE ORGANIZATION CIRCULATION PROPORTION & SCALE PRINCIPLES
- Assignments: 1.Japanese Bridges, 2.Massing Models, 3.Origami, 4.Kirigami Architecture, 5.Sacred Space, 6.Joyful Space, 7.Great-Window Inspired Residence
- Cedar Hill Housing

ART371 ARCHITECTURAL MATERIALS & METHODS

- 2020 PDF's of in-class Lectures before Coronavirus (also on "Canvas"): STANDARDS STRUCTURAL FOUNDATIONS WOOD: 1, 2, 3 Masonry&Concrete: HISTORY, STONE, ...
- 2020 PPTX Lectures with Audio due to Coronavirus (also on "Canvas"):
  - ... BRICK PPTX-audio PDF
  - BLOCK PPTX-audio PDF
  - CONCRETE PPTX-audio PDF CLOUD w/transcript VIDEO
  - STEEL&HIGH-RISES PPTX-audio PDF MP4 YouTube
  - SHELL/ENVELOPE PPTX-audio PDF MP4 YouTube CLOUD w/transcript(Pswd:TH1NKZ&)
  - INTERIORS PPTX-audio PDF MP4 YouTube CLOUD w/transcript(Pswd:3e@g&lik!)
- Assignments: 1:Site1_Bridge&Creek 2:Site2,Revit 3:Neighborhood,Revit2,LEED1 4:FINAL DESIGN (Residential Renewal, VR, etc.)
- Final Exam

ART/SOC371 FRANK LLOYD WRIGHT

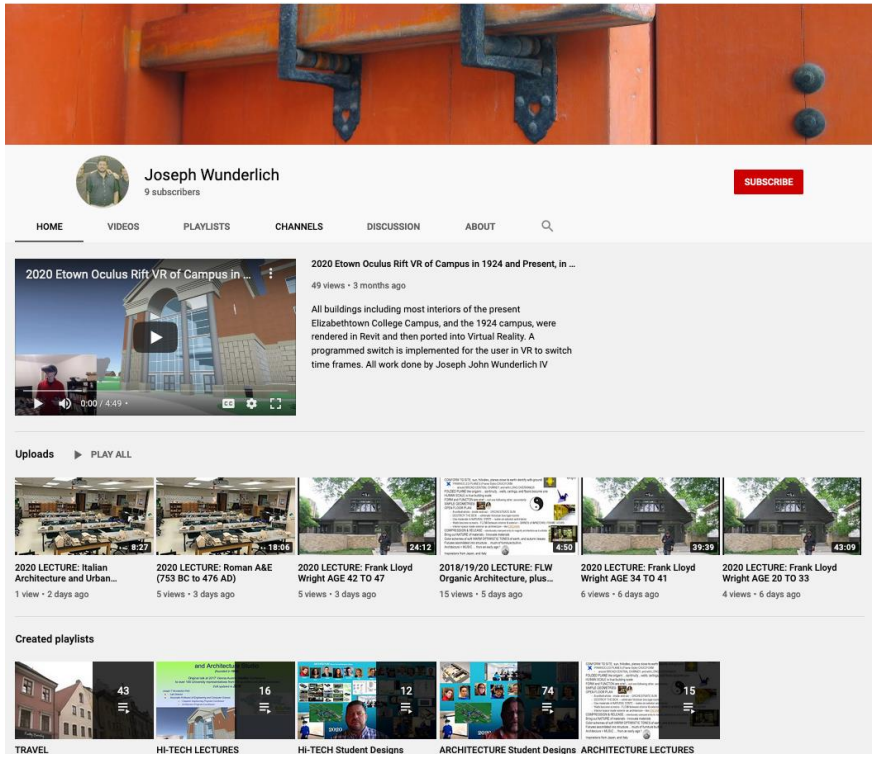
EGR/ART495/495(495AA&B) ARCHITECTURE STUDIO I&II (Juried)

- 2017 Etown Library Cafe from (1969 Library Drawings)
  - ACOUSTICS
  - Etown Solar Paths
  - LEED: Daylight, Views, Lighting, Acoustics, Raw materials, Material Ingredients
  - Revit Intro, Levels, Walls, High Library, Interior, Doors&Windows, Library acoustics
- 2018 Etown Residential Renewal
  - LIGHTING: Design, Solar, Feng Shui
  - LEED Daylight, Views, Lighting, Neighborhood Development; LEED ND rules
  - Etown Master Plan: 1969 Chapter 1 and seven site analysis maps, 2011 update; Etown 3d Google Map, and Topographical Map(Source) Overviews of: Human Vision, Color , and Illumination Engineering; Illumination Engineering Standards (IES): Eyes&Brain, NonVisual Effects, Performance&Perception, and Gallery Design
  - Revit assignments: 495A Perspective, 495B Perspective; 495A&B Perspective, 495A Solar, 495B Solar; 495A REVIT Intro, 495B REVIT Topo; 495A,REVIT BIM (Building Information Management), Doors&Windows, 495B REVIT Topo; ("SWEETS" Catalog); 495A&B Site Walks
  - Dorms by Cannon Design; Real Estate Development
- 2019 Etown $1M RACP Grant, and Cedar Hill Housing
  - SPECIFICATIONS
  - Assignments: 1. Bridges, 2. Green Roofing Spec, 3. $1M RACP Grant for Sports, Fitness, & Wellness, 4. Revit Great-Window Inspired Residence
  - Cedar Hill Housing

EGR293/293(4 credits), EGR293/293(2 credits) "ENGINEERING RESEARCH IN ARCHITECTURE" (Studio)

Frequent Guest lectures in ART280 World Architectures, ART115 Intro to Art History, and EGR110 Intro to Engineering

Mansions & Inspirations (PDF, PPT) | Roman Architectural Engineering (PDF, PPT) | 2006-2015 Intro to Architecture Theory (PDF, PPT) | Personal House Architecture



ARCHITECTURE DESIGN THEORY

LECTURE SERIES

- PPTX MP4 YouTube PDF
- PPTX MP4 YouTube PDF
- PART 3 FORM & SPACE *(This Lecture)* PPTX MP4 YouTube PDF
- PPTX MP4 YouTube PDF
- PPTX MP4 YouTube PDF
- PPTX MP4 YouTube PDF
- PPTX. MP4 YouTube PDF

ARCHITECTURE DESIGN THEORY

LECTURE SERIES

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PART 2	FORM	PPTX MP4 YouTube PDF
PART 3	FORM & SPACE *(This Lecture)*	PPTX MP4 YouTube PDF
PART 4	ORGANIZATION	PPTX MP4 YouTube PDF
PART 5	CIRCULATION	PPTX MP4 YouTube PDF
PART 6	PROPORTION & SCALE	PPTX MP4 YouTube PDF
PART 7	PRINCIPLES	PPTX MP4 YouTube PDF