ARCHITECTURE DESIGN THEORY

PART 1: **PRIMARY ELEMENTS**

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ARCHITECTURE DESIGN THEORY

LECTURE SERIES

- PART 1 PRIMARY ELEMENTS *(This Lecture)* PPTX MP4 YouTube PDF
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- PART 3 FORM & SPACE 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

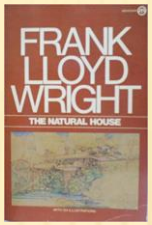
SOURCES

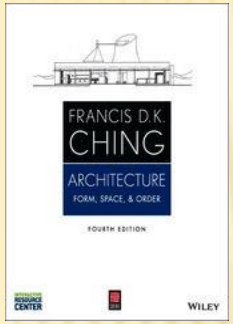
* Personal Architecture projects, frequent international travel, BS Architectural Engineering (U.Texas 84), plus 1-1/2 years of Urban Design (UCSD 1986-87)

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.
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[8] ***PENN Rare Book and Manuscript: Frank Lloyd Wright's Paternal Family.*** Penn Library. University of Pennsylvania, Feb. 20, 2014.
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[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.
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[13] Wright, Frank Lloyd. ***In the Cause of Architecture; Second Paper.*** Architectural Record, May 1914.

PRIMARY ELEMENTS

"Primary elements of form:

Points, one-dimension lines, two-dimensional planes, and three-dimensional volumes, exist in spatial environments as conceptual elements. ***They are not visible except in the minds eye, but we can sense their presence"*** [1]

"Points mark positions in space

Lines defining edges of planes

Planes define boundaries of volumes

Volumes of forms and space"
[1]

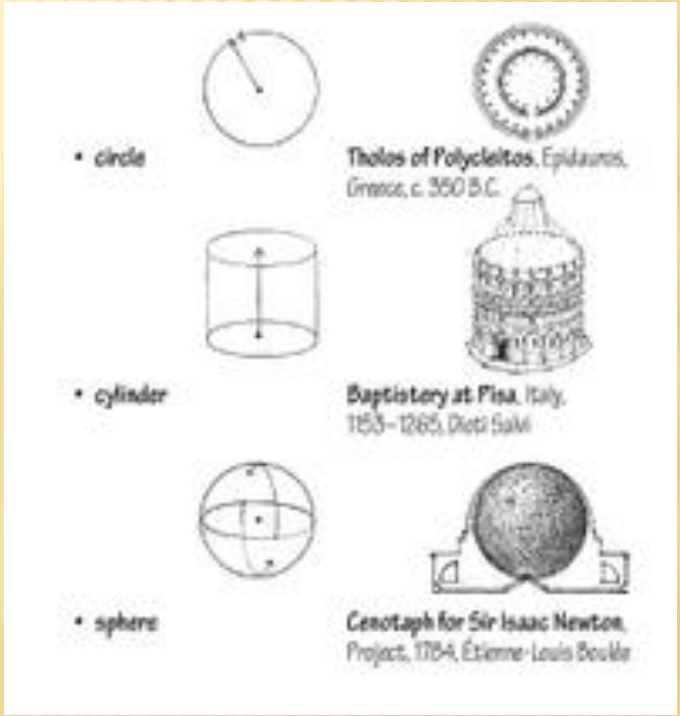
POINTS

“mark positions in space relative to our environment, and attract attention” [1]

POINT

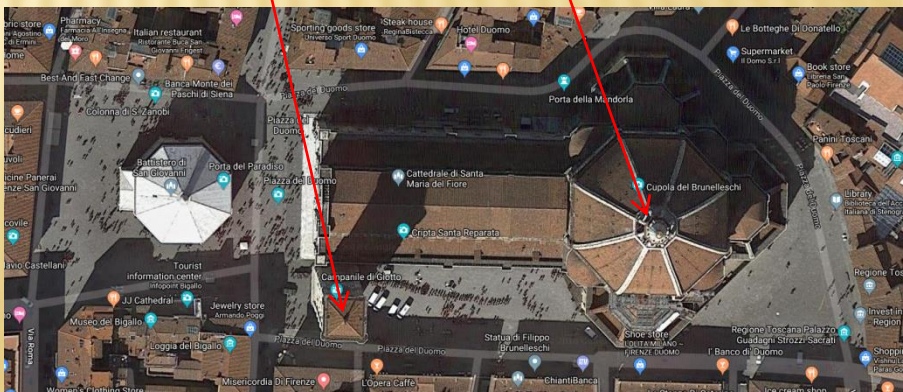
*"**Point-generating forms in plan-view** (from above)*

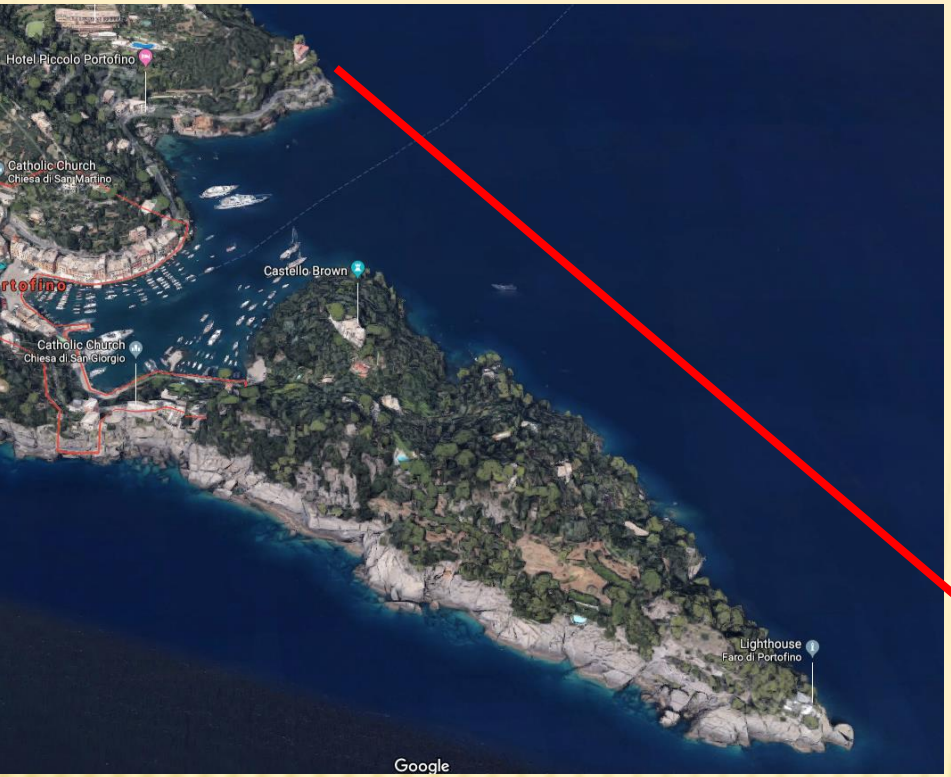
- *The small-circle, cylinder, and sphere*
- ***FOUNTAIN, COLUMN, OBELISK, TOWER, or DOME***
  - *a **STATUE** in plan view is also a point"* [1]



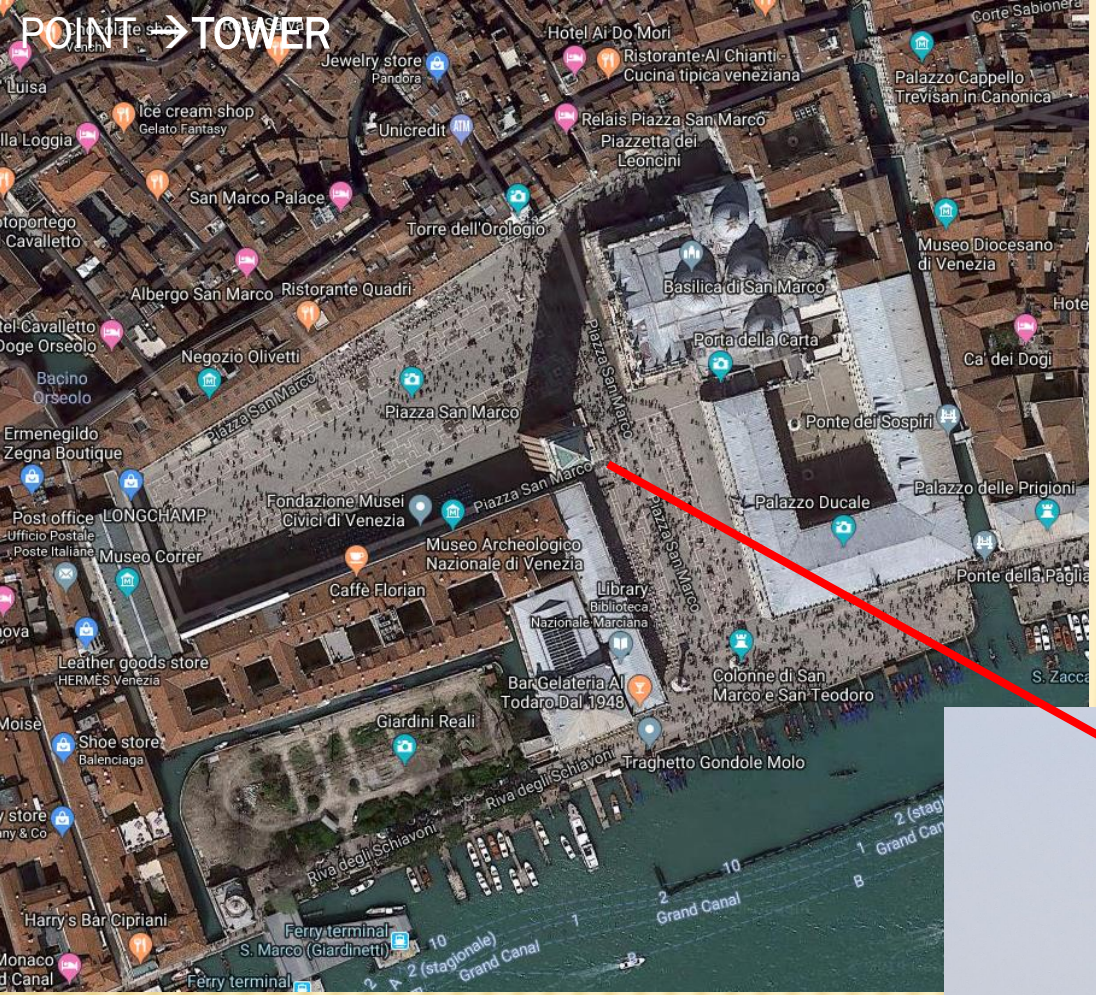
TOWER, DOME

POINTS

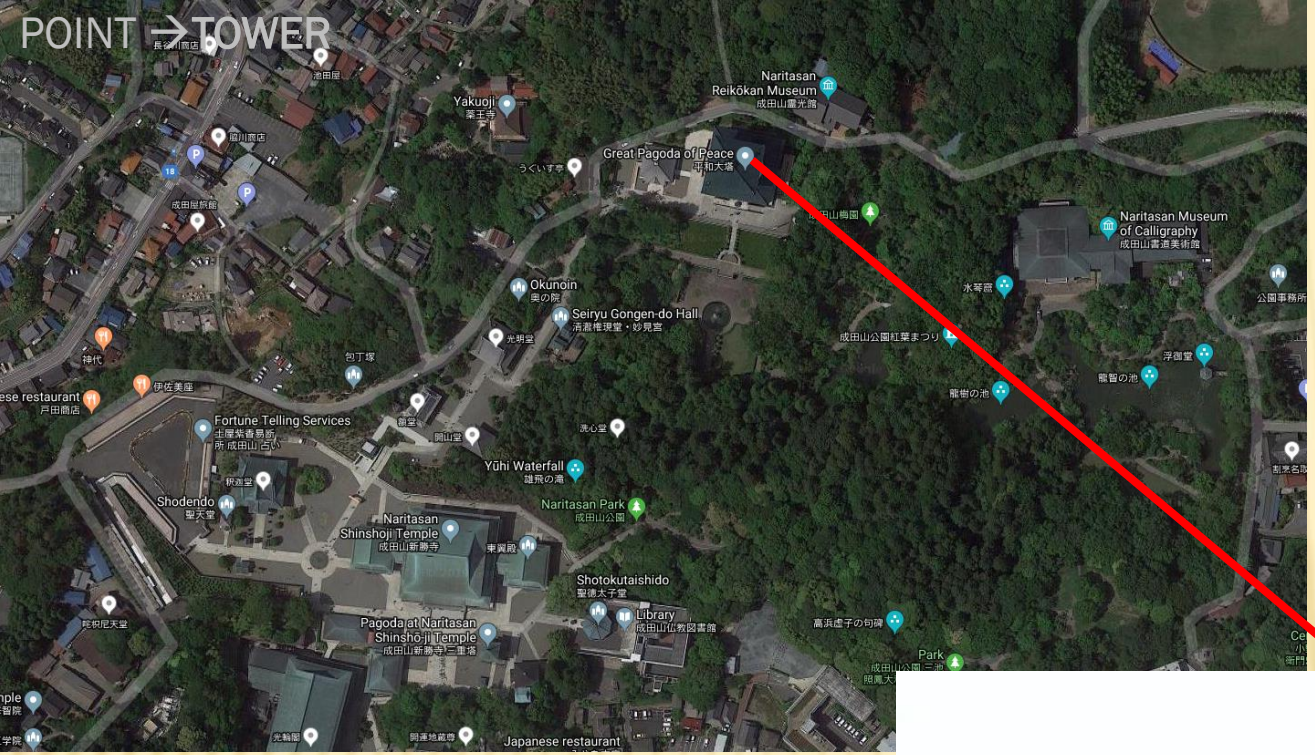



Hotel Piccolo Portofino
Catholic Church
Chiesa di San Martino
Castello Brown
Catholic Church
Chiesa di San Giorgio
Lighthouse
Faro di Portofino
Google

Travel to Portofino Italy, 2004


POINT → TOWER
Hotel Ai Do Mori
Ristorante Al Chianti
Cucina tipica veneziana
Jewelry store
Pandora
Ice cream shop
Gelato Fantasy
Unicredit
Relais Piazza San Marco
Piazzetta dei Leoncini
Palazzo Cappello Trevisan in Canonica
San Marco Palace
Torre dell'Orologio
Museo Diocesano di Venezia
Albergo San Marco
Ristorante Quadri
Basilica di San Marco
Porta della Carta
Negozio Olivetti
Piazza San Marco
Ponte dei Sospiri
Palazzo Ducale
Palazzo delle Prigioni
Fondazione Musei Civici di Venezia
LONGCHAMP
Post office
Museo Correr
Museo Archeologico Nazionale di Venezia
Caffè Florian
Library
Biblioteca Nazionale Marciana
Ponte della Paglia
Leather goods store
HERMES Venezia
Bar Gelateria Al Todaro Dal 1948
Colonne di San Marco e San Teodoro
Giardini Reali
Shoe store
Balenciaga
Traghetto Gondole Molo
Riva degli Schiavoni
Harry's Bar Cipriani
Ferry terminal
S. Marco (Giardinetti)
Grand Canal

Travel to Narita Japan, 2013



Travel to Narita Japan, 2013


FRUTTA E SIGHTE

POINT →TOWER

Travel to Mons Belgium, 1992, 2014

POINT

"This pyramidal composition culminates in a spire that establishes this fortified monastery as a specific place in the landscape" [1]

Mont Saint Michel France, 13th century

POINT → OBELISK

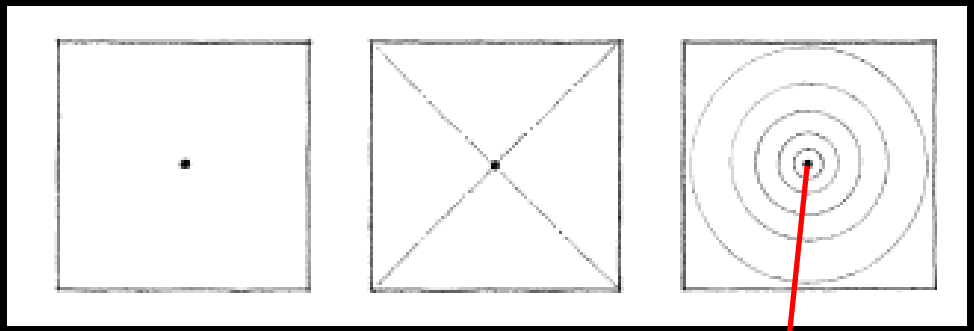
Travel to Rome, 2011

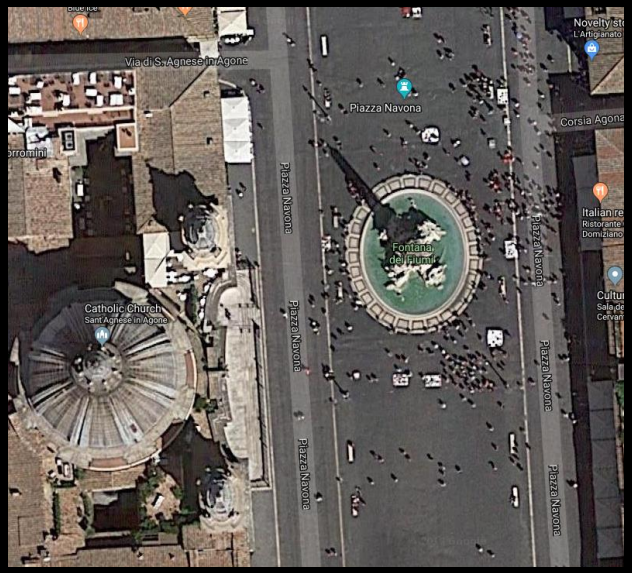
Travel to Venice,
2008,2011,2014,2017

Campanile di San Marco in Piazza San Marco, Venice

POINT – a Fountain defining space, and a sense of place

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





Fontana Del Fiumi in Piazza Novana , Rome

Rome 2011

POINT – a Fountain defining space, and a sense of place

Rome 2011

Fontana Del Fiumi in Piazza Novana , Rome

POINT – a Fountain defining space, and a sense of place

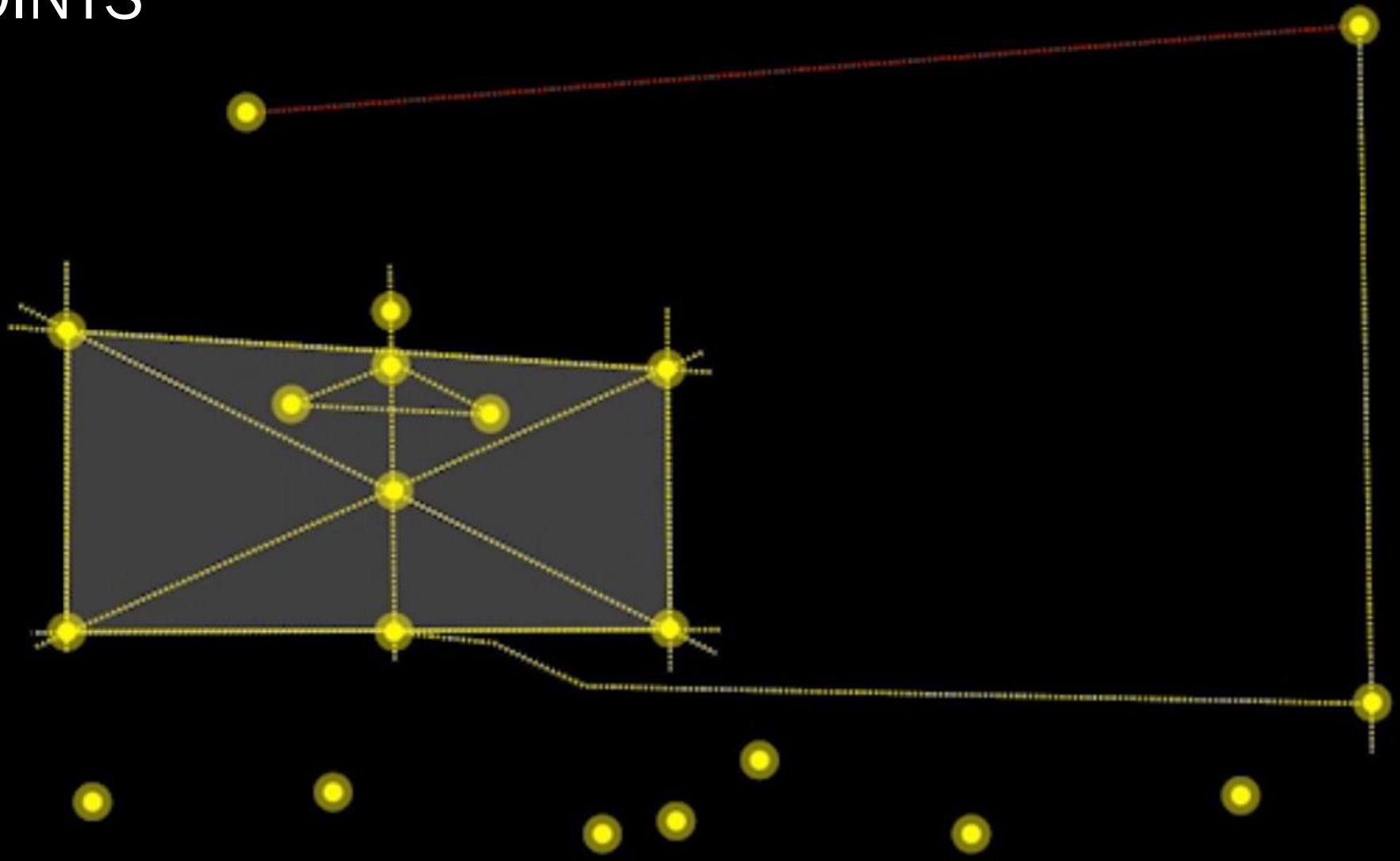
Paris 1992

“Point can mark ends of lines whether real or imagined…

... or intersections of lines ...

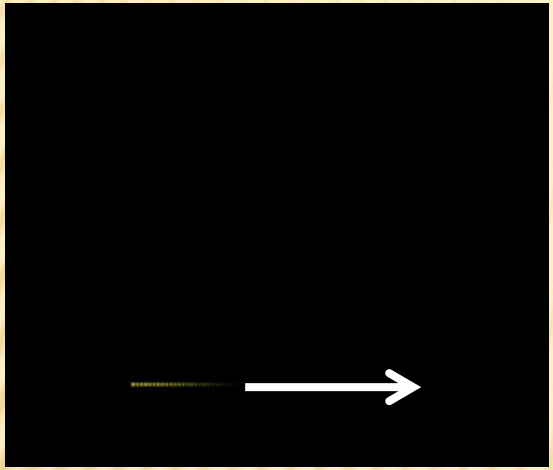
… or the center of a field” [1]

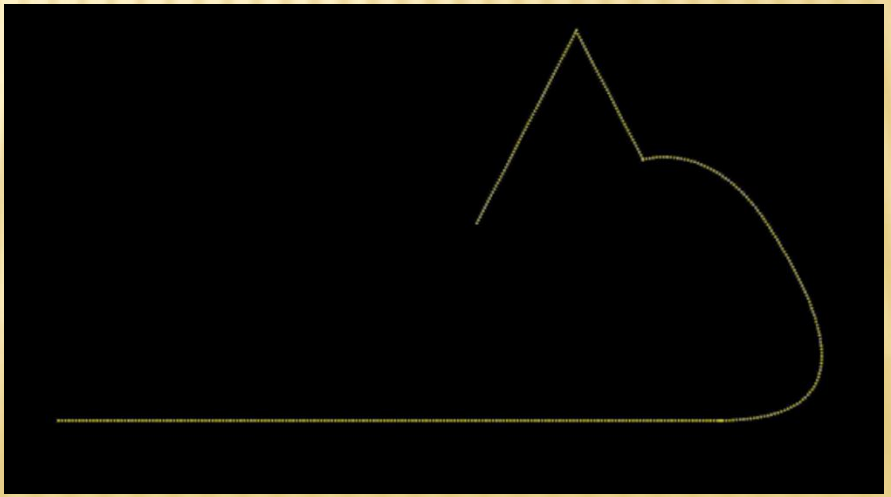
POINTS



POINT in MOTION

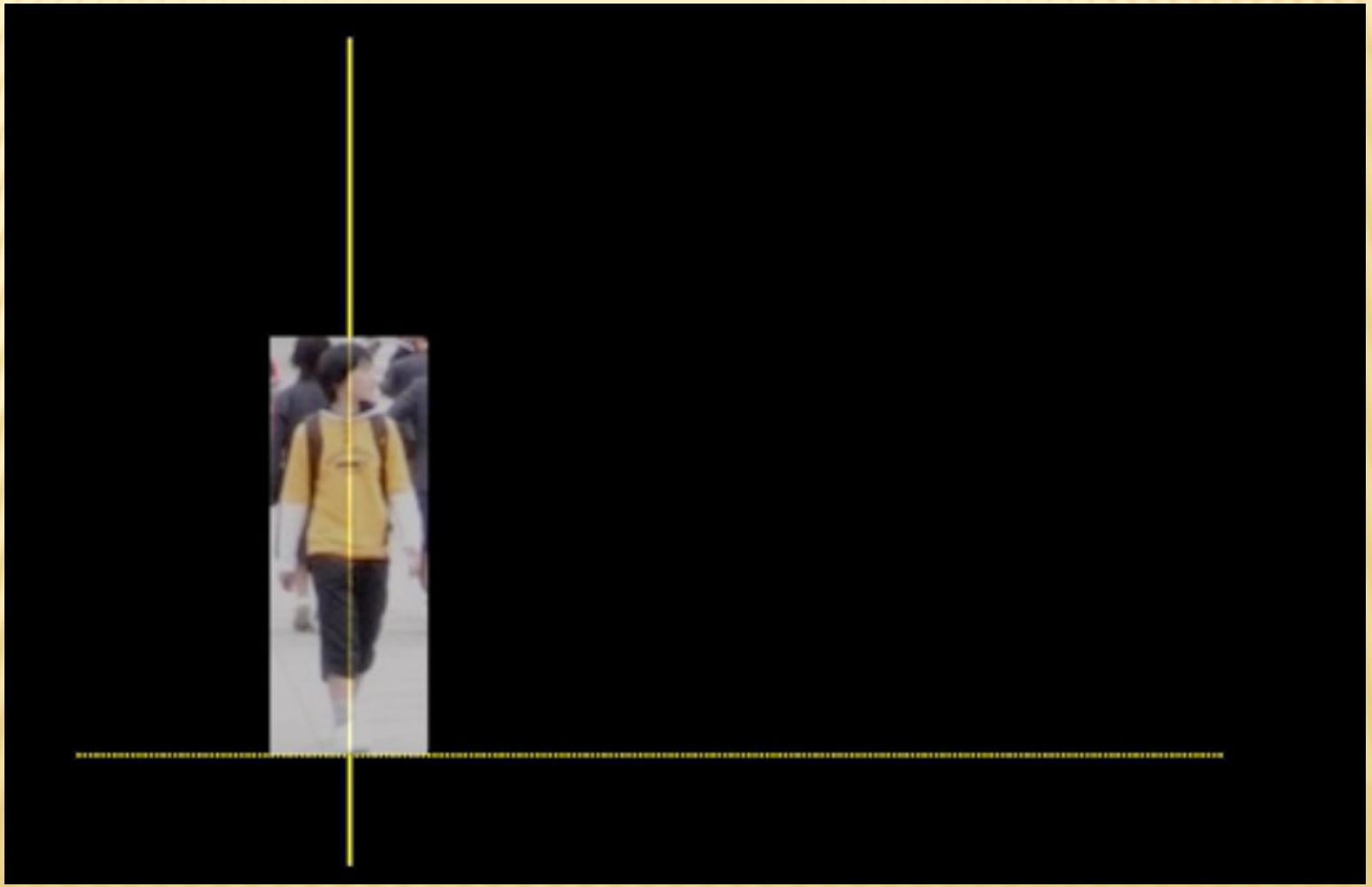
*"expresses **Direction, Movement,** and **Growth"*** [1]





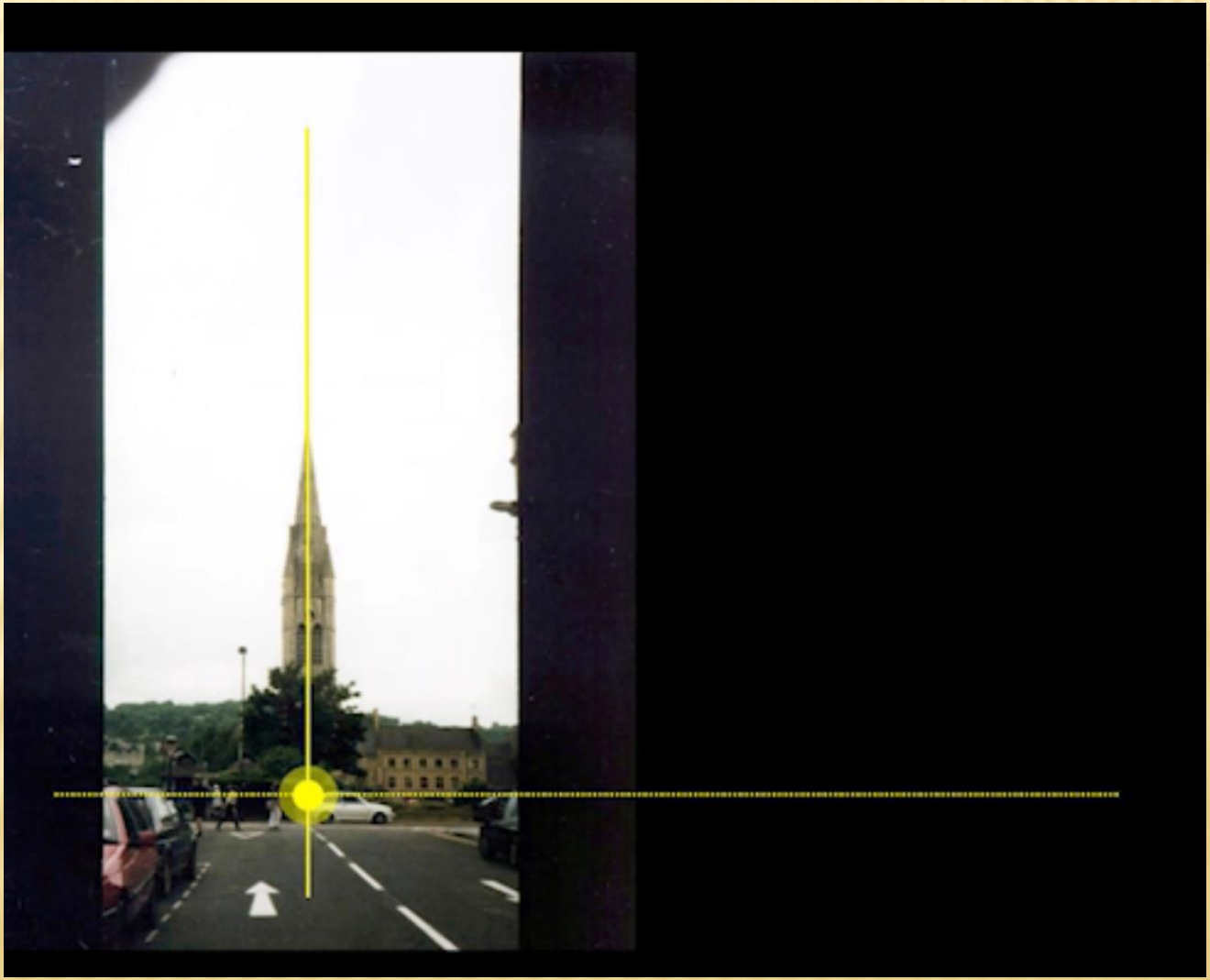
LINE

*"a **vertical line** can express a state of **equilibrium** with gravity, and symbolize **the human condition"*** [1]



LINE

"vertical equilibrium …the human condition" [1]



Travel to Venice,
2008,2011,2014,2017

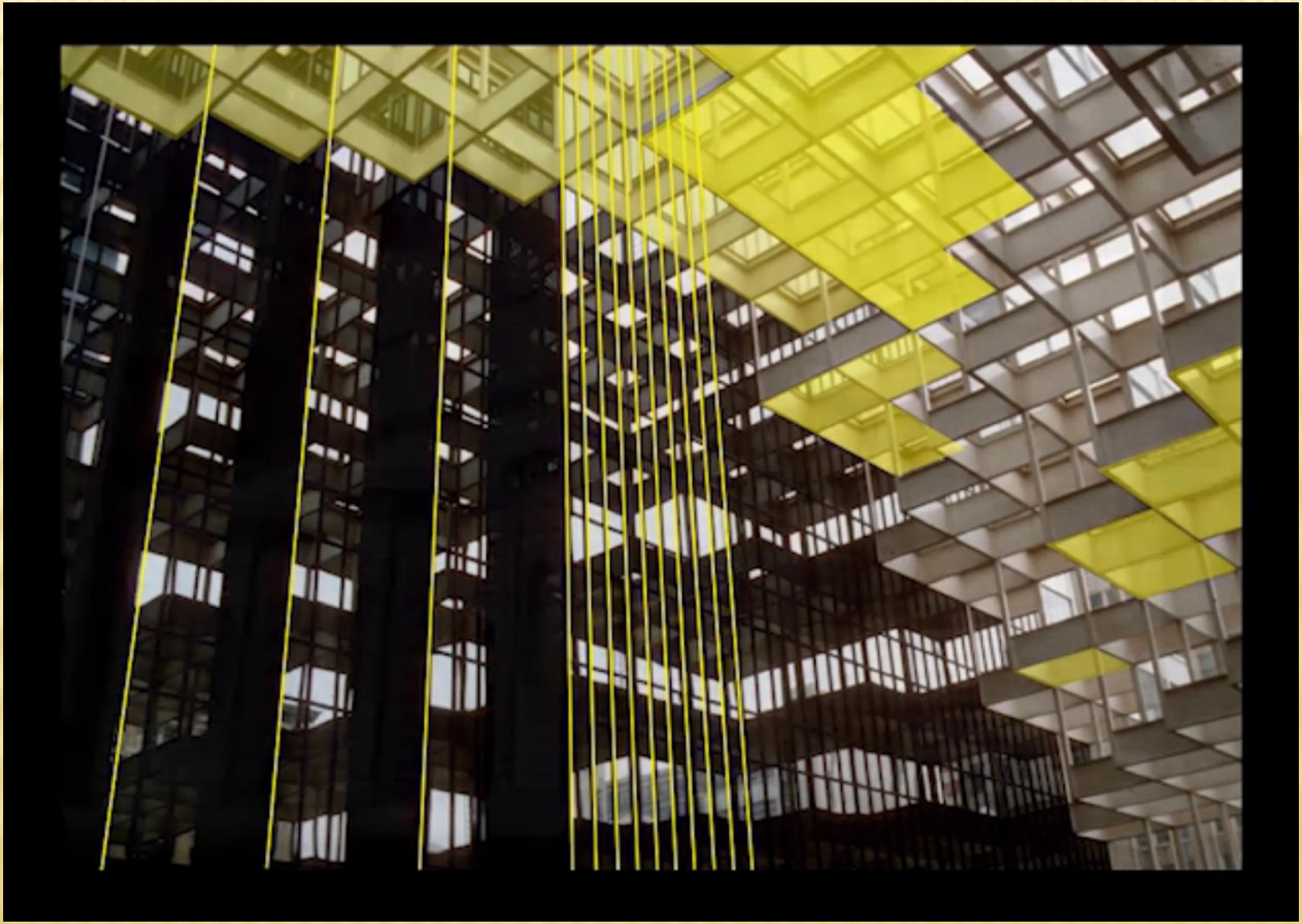
LINE/TOWER

LINE/TOWER

Travel to Venice,
2008,2011,2014,2017

LINE

“can articulate the edges and surfaces of planes and volumes” [1]

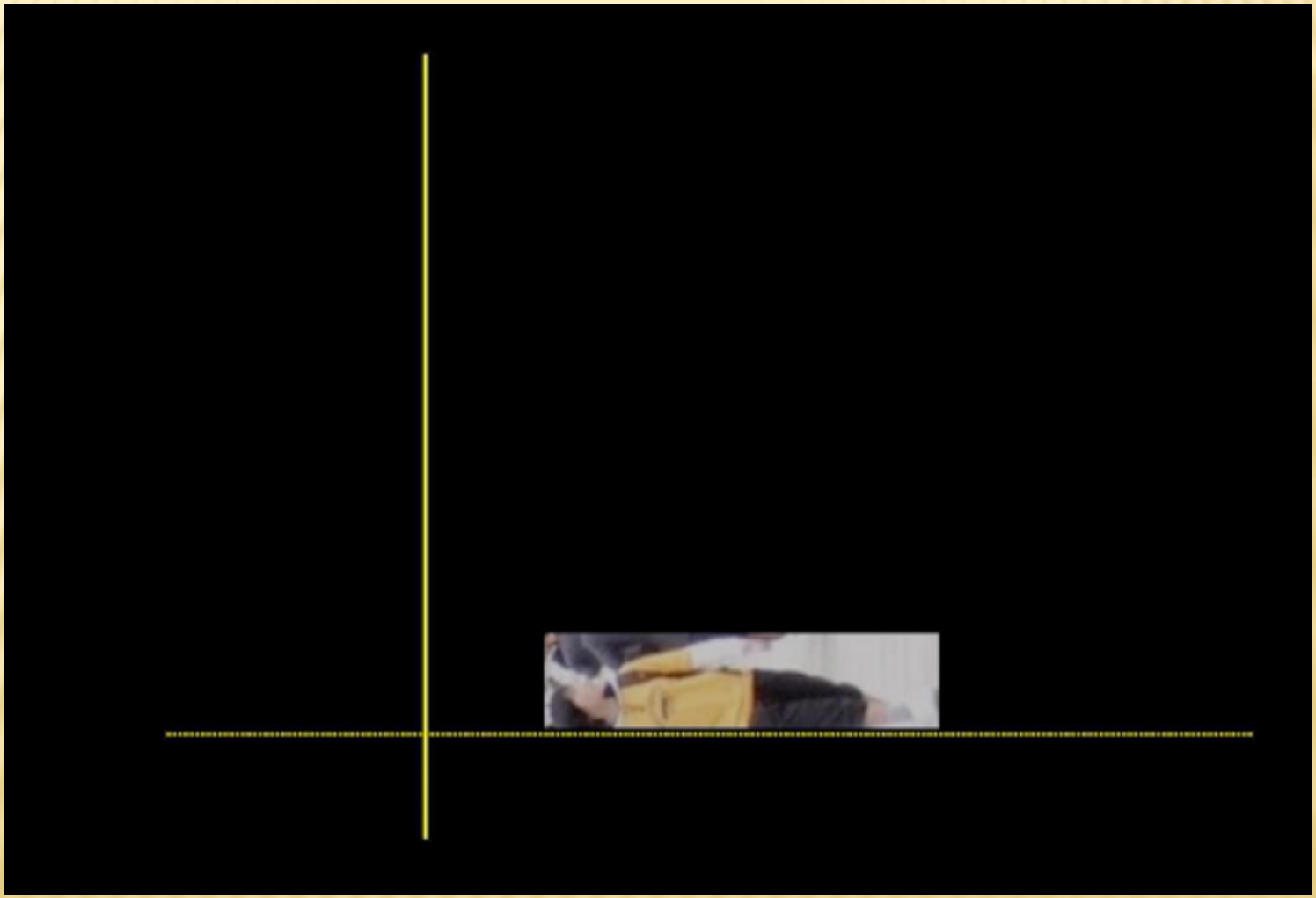


LINE

*"as **organizing devices** -- aligning and ordering forms and spaces"* [1]

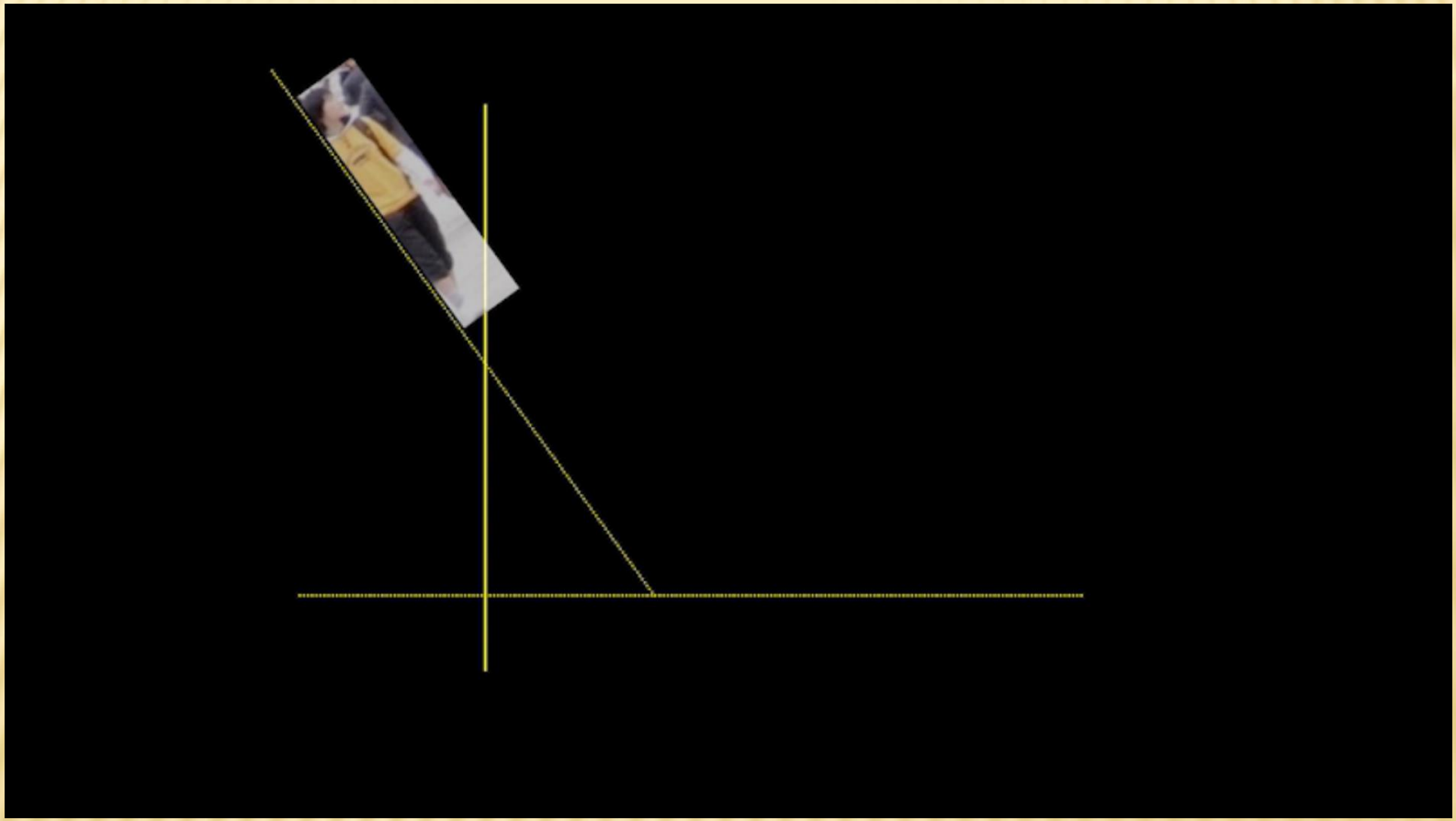
LINE

*"A **horizontal line** can represent stability or a body at rest"* [1]

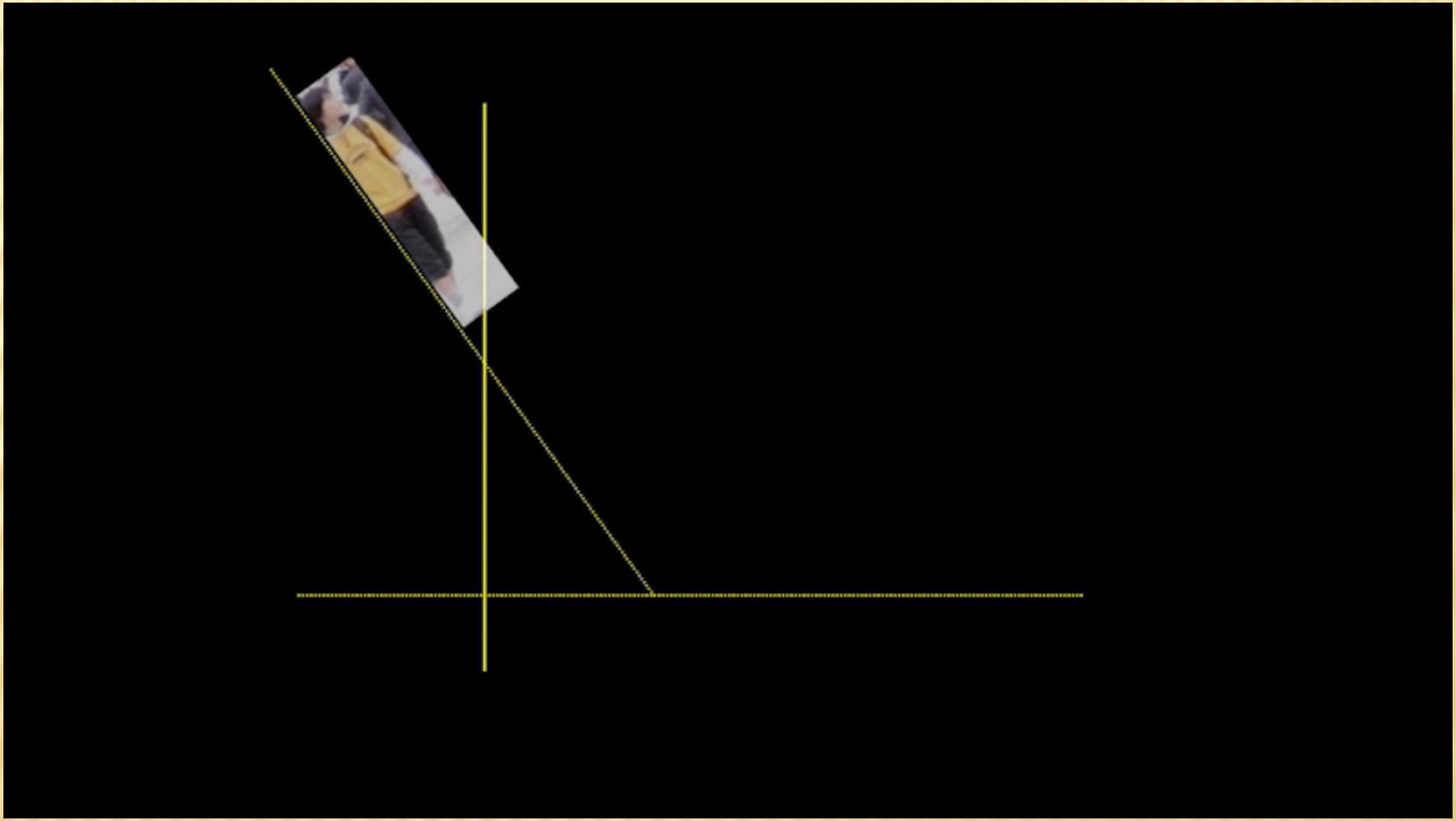


LINE

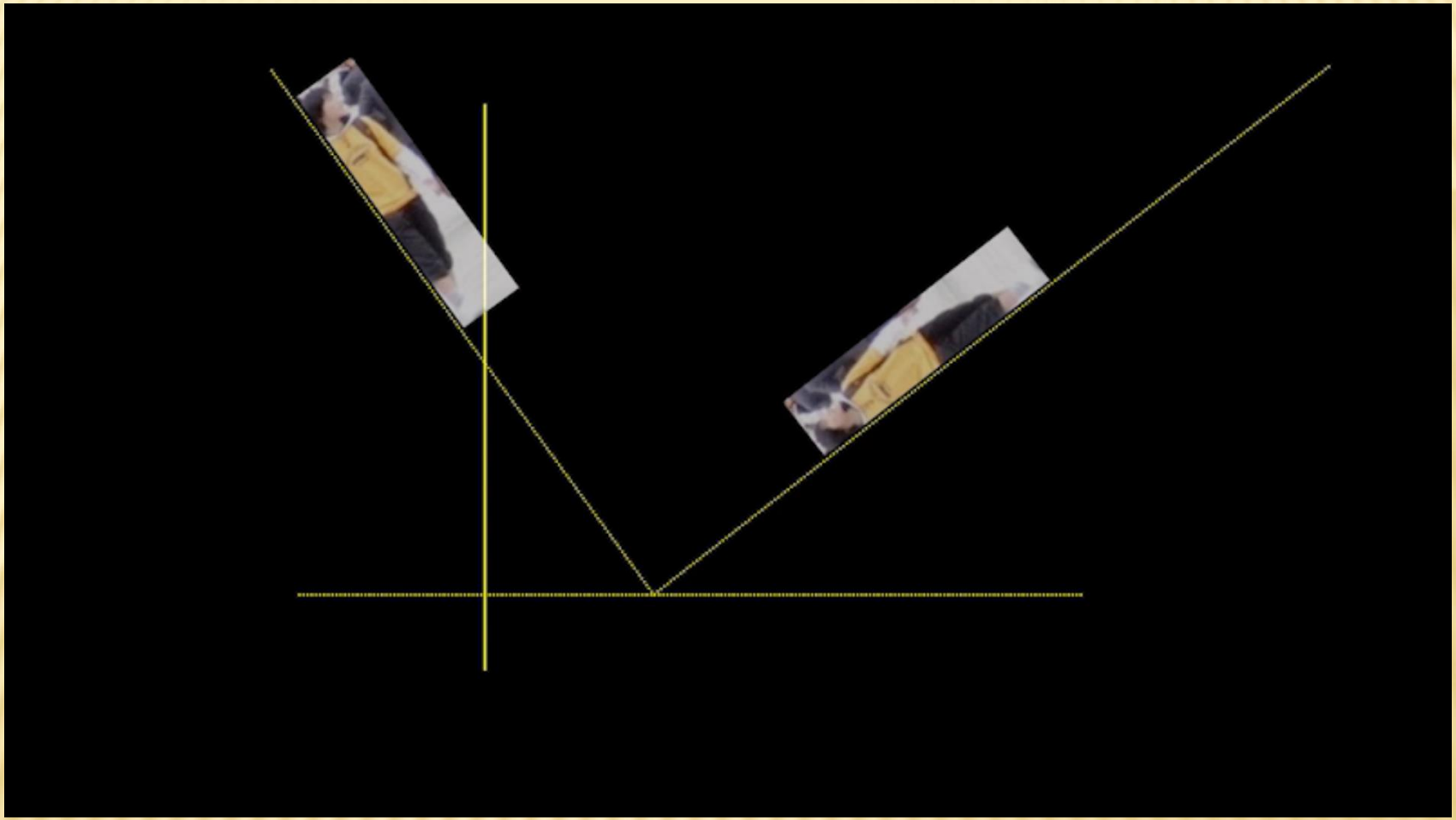
*"An **oblique line** is a deviation from the vertical or horizontal…*



... and may be seen as ***a vertical line falling...***

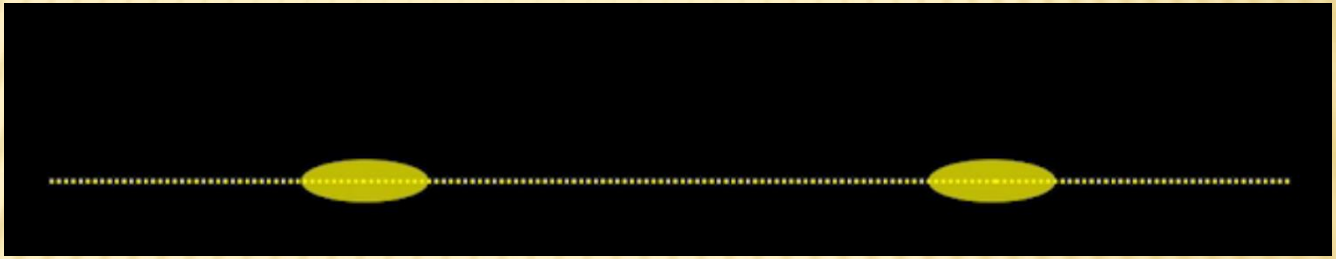


*... or **horizontal line rising”*** [1]



LINE

*“Although points give a line finite length, it can also be a segment of an infinitely longer **PATH**”* [1]



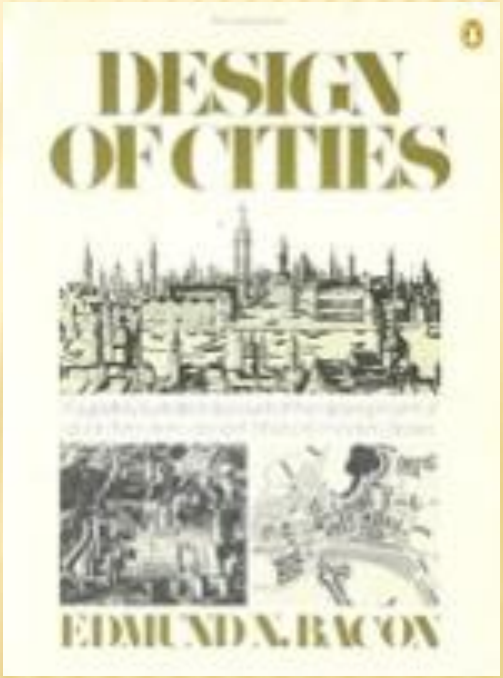
LINES IN URBAN DESIGN

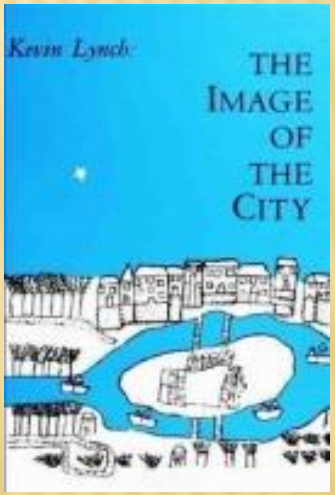
a Line can create a **PATH** [5] ... more in PART 5 CIRCULATION

a Line can create an **EDGE** [5] ... more in PART 5 CIRCULATION

a Line can create an **AXIS** [4] ... more in PART 5 CIRCULATION

and in PART 7 PRINCIPLES





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

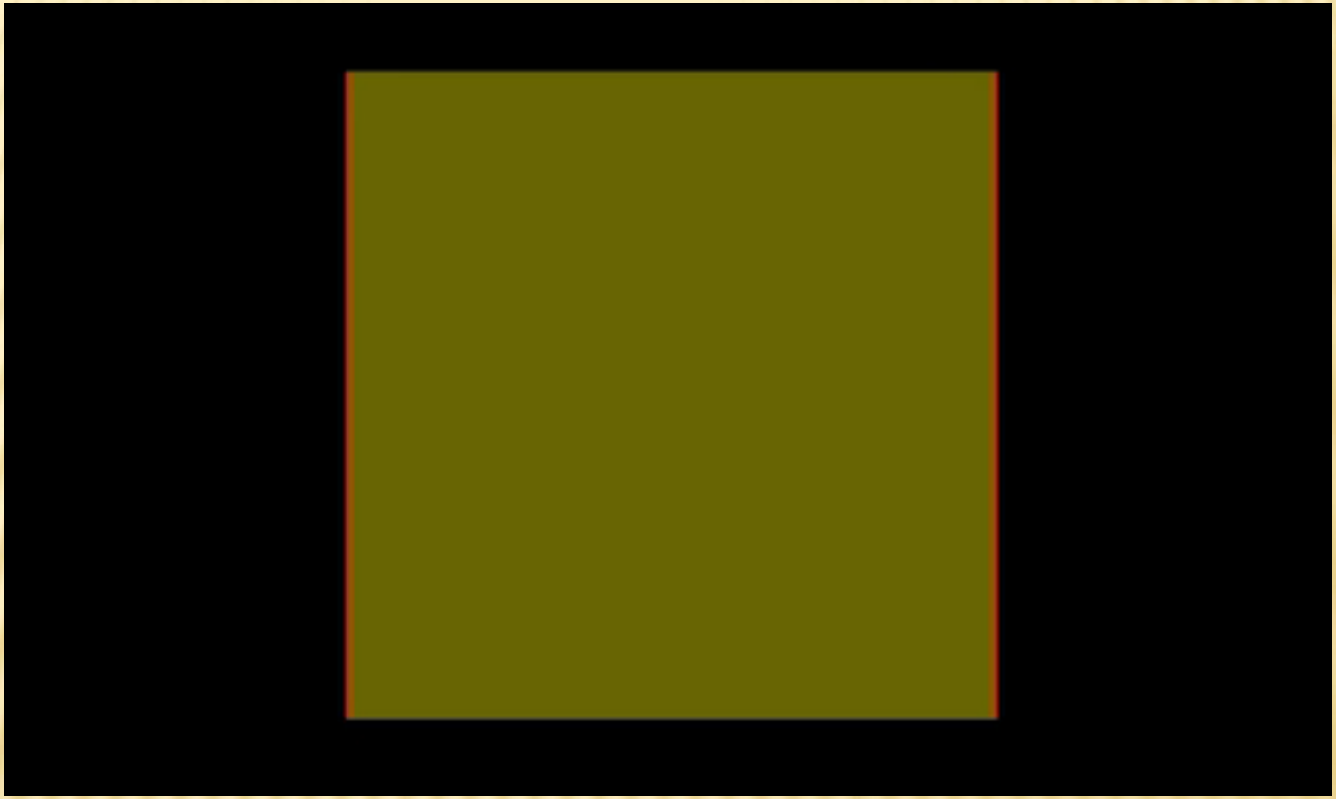
[5] Lynch, Kevin**.** ***The Image of The City.*** MIT Press, 1960.

- Line -> PATH
- Line -> EDGE
- Line -> AXIS

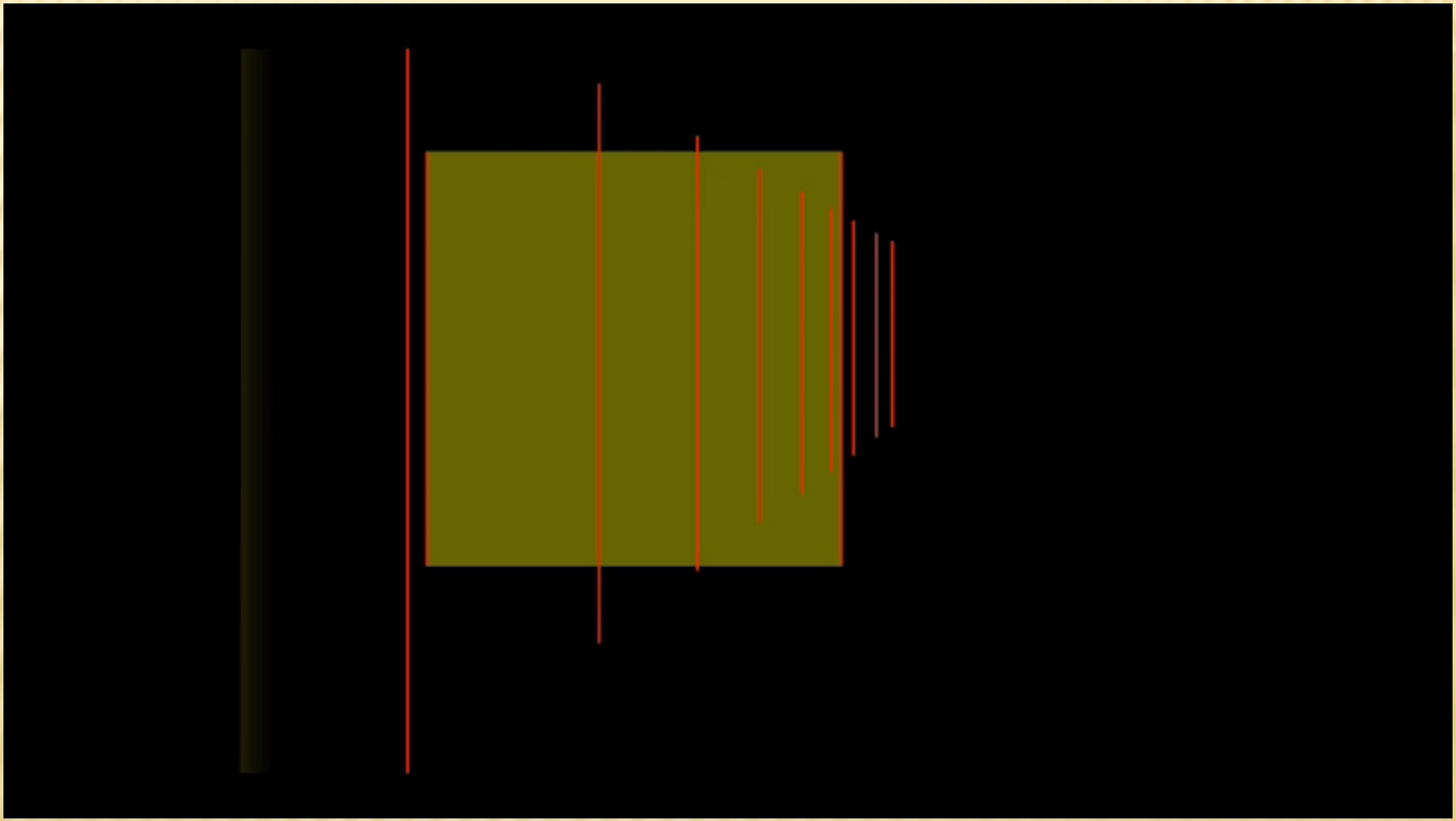
Travel to Italian Riviera in 2004

PLANE

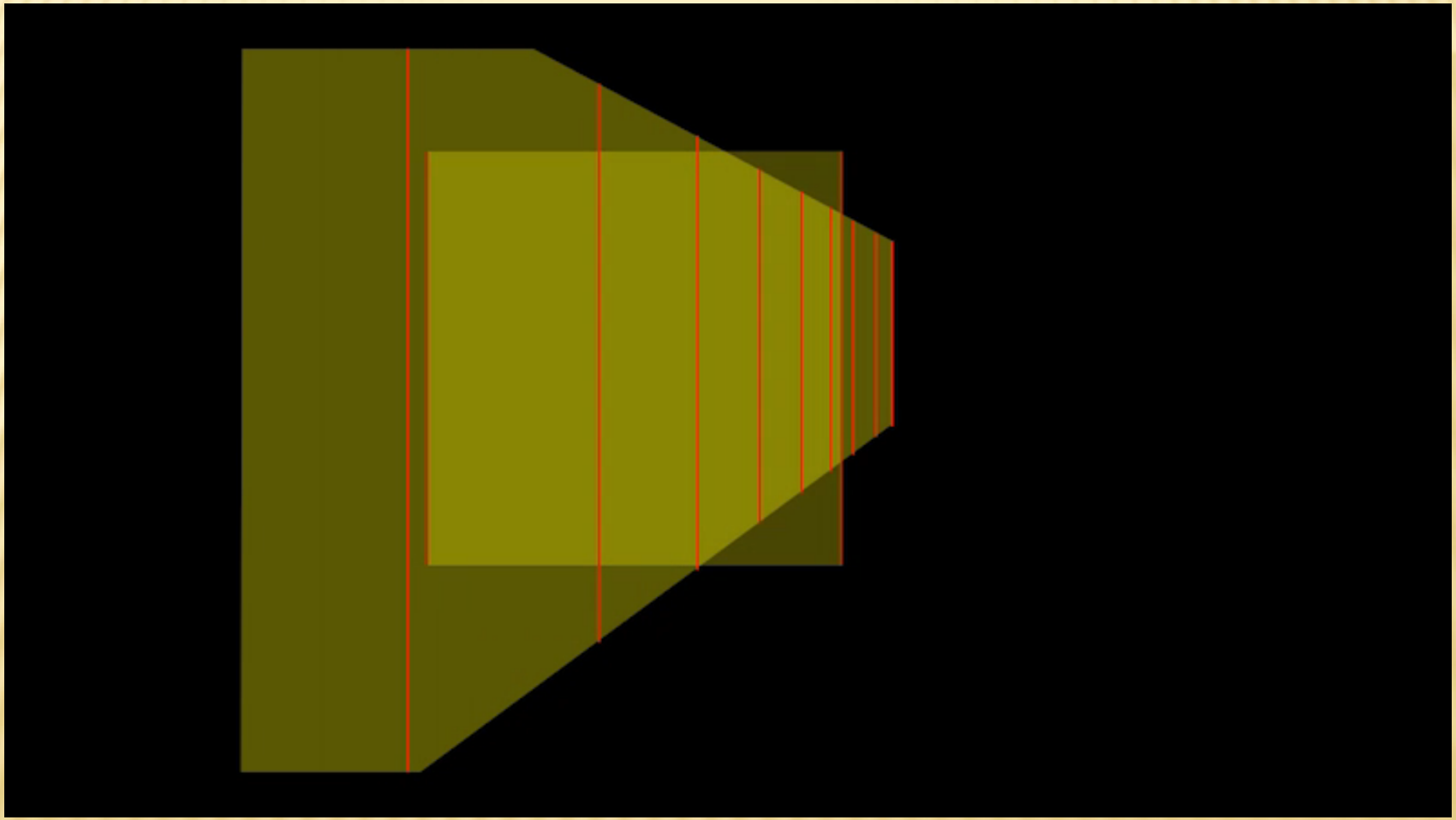
“A transparent spatial membrane stretched between two parallel lines” [1]



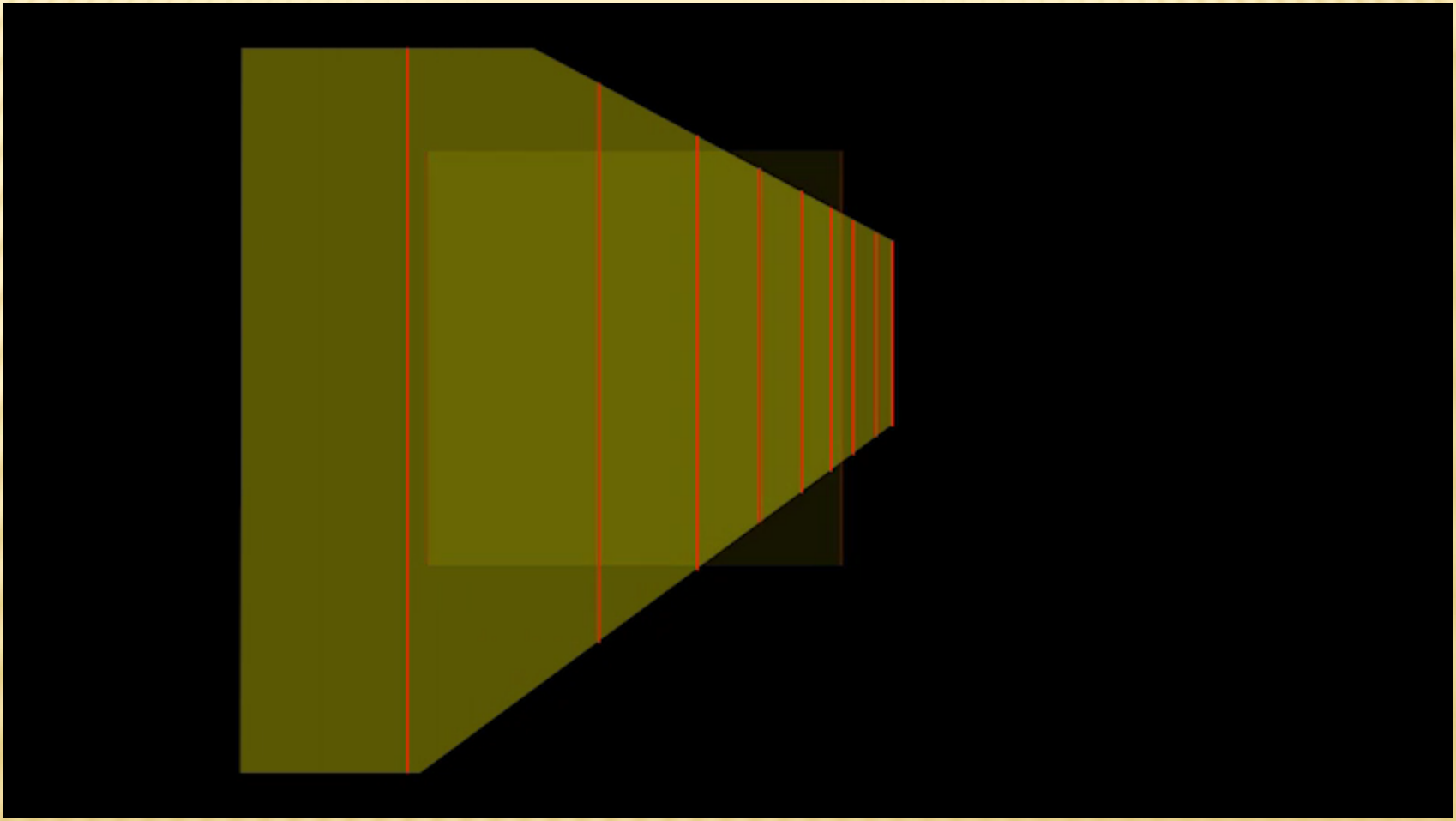
perception of the PLANE



perception of the PLANE



perception of the PLANE

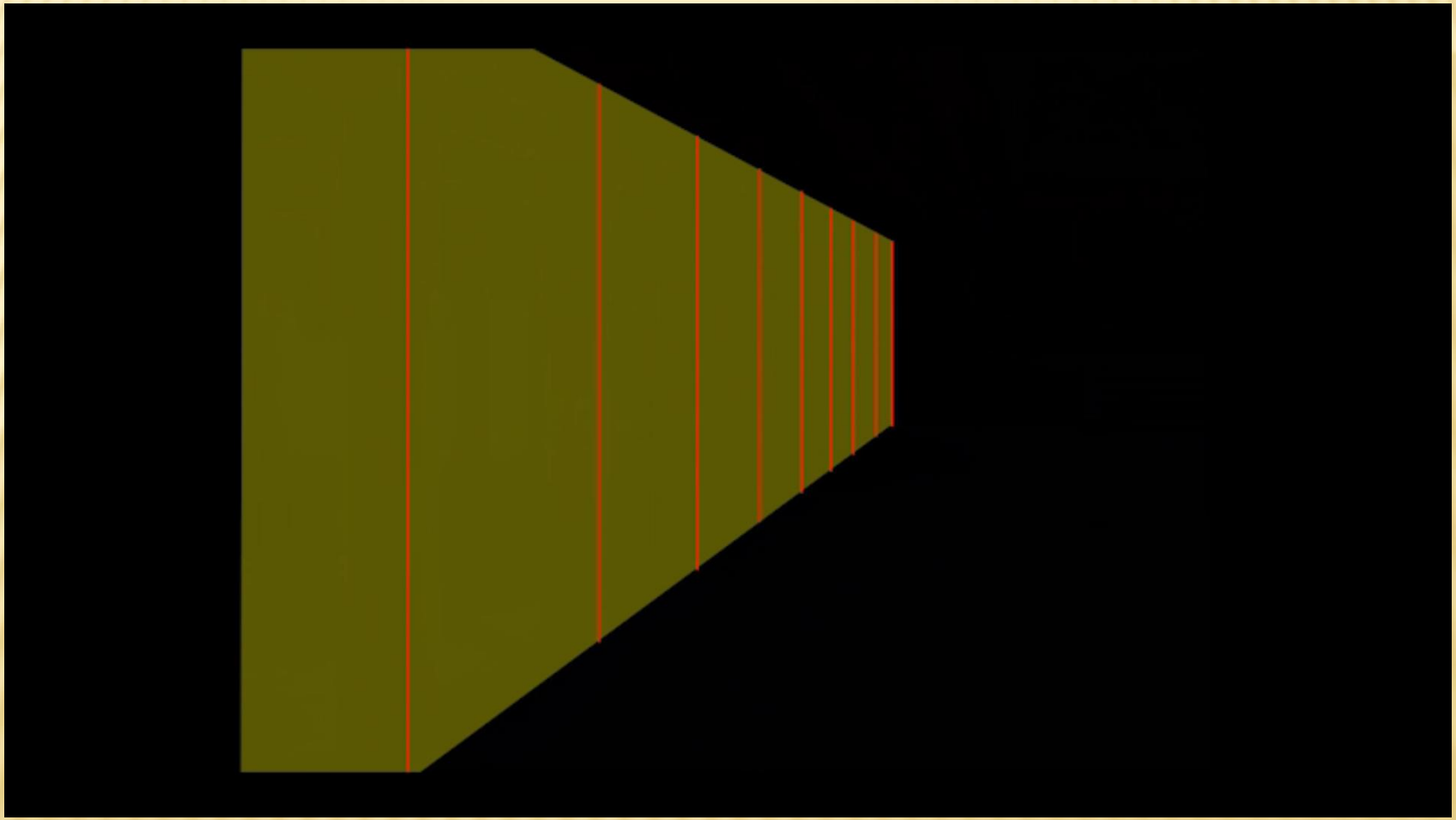


LINES-> **Perceived** PLANE, **COLONNADE**

*"Lines can form a series of columns establishing a **COLONNADE** … the penetrable boundary (plane) of **adjacent spaces"*** [1]

LINES-> **Perceived** PLANE, **COLONNADE**

“penetrable boundary of adjacent spaces” [1]



PLANE

" Shape is the primary identifying characteristic of a plane. It is determined by the contour of the line forming the edges of the plane. Because our perception of shape can be distorted by perspective ***FORESHORTENING ,*** *we see the true shape of a plane only when we view it frontally"* [1]

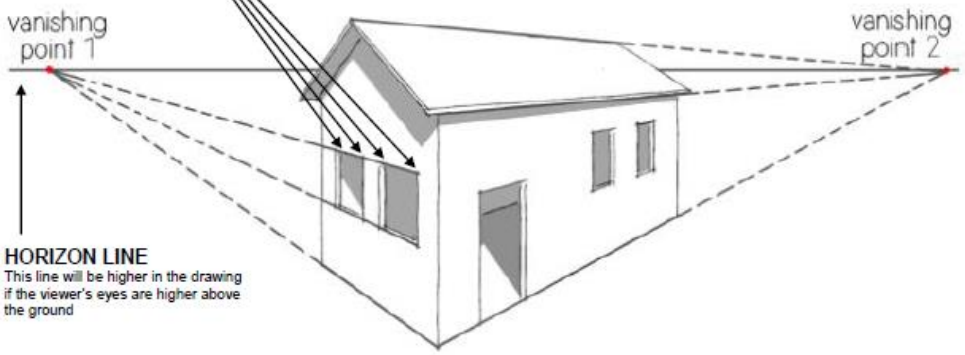
NAME: _____

ART/EGR499A Architecture Studio I
J.Wunderlich PhD and P.Ricci PhD
Assignment 2

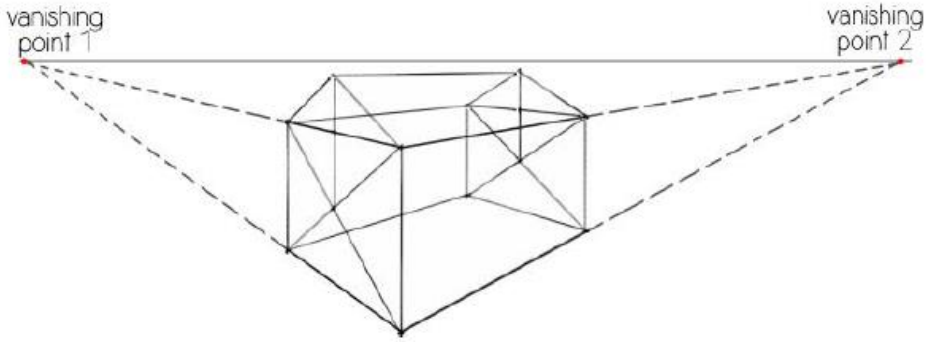
TWO POINT PERSPECTIVE (to Horizon)

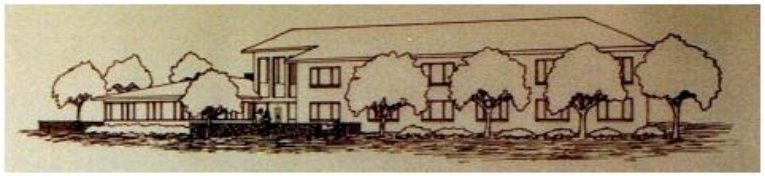
- Vertical lines are parallel to the edges of the paper
- Horizontal lines converge to **TWO VANISHING POINTS** on **HORIZON LINE**
  - **FORESHORTENING** means things closer to you seem bigger, so sequences of horizontal or vertical lines get further apart as they get closer
    - Use **diagonal lines** to help with things like finding the centers of windows, or the location of roof peaks on gables

Image from: http://www.threecolordisasters.com/?p=231



HORIZON LINE
This line will be higher in the drawing if the viewer's eyes are higher above the ground





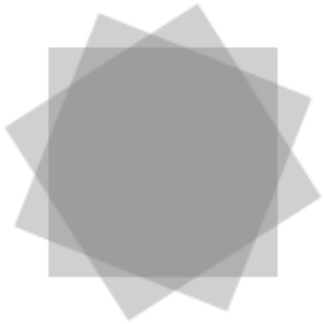
JT Wunderlich Arts Interest House (1981)
Common area (left) with Dorms (right)

PLANE

“surface, color, pattern, and texture affect its visual weight and stability” [1]

Solid plane is static, yet carries more mass

Textured plane is more active, but has less mass



Rotated plane builds mass where planes overlap, while roation adds movement

Overlapping the textured plane on top of the solid plane creates tension.

The solid plane carries more mass and so we expect it to advance and textured plane to recede into the background

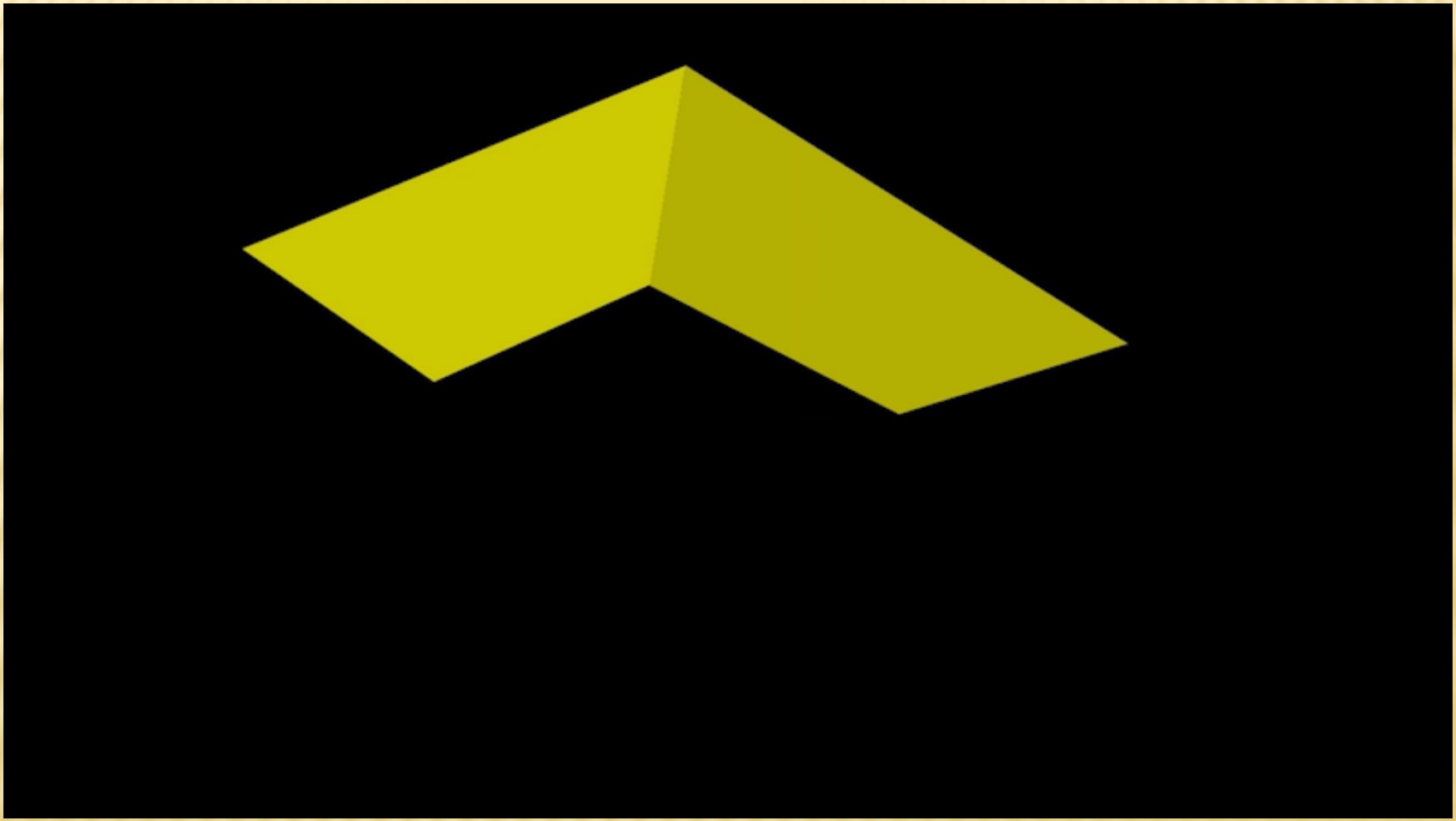
The 3-dimensional sphere naturally carries more mass than the textued plane.

We expect the sphere to advance and so tension is reduced here

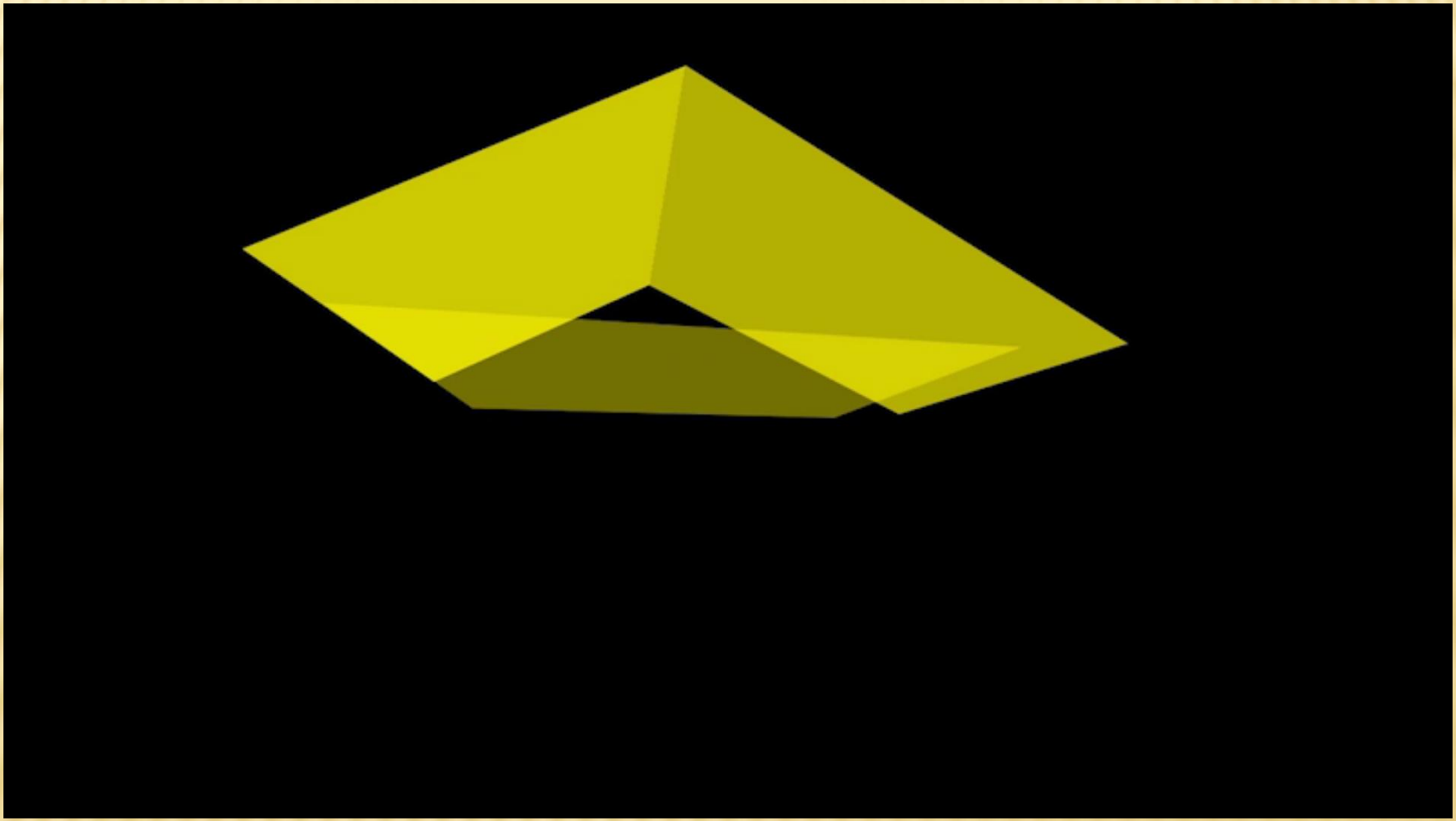
https://vanseodesign.com/web-design/form-surface-volume/

PLANE

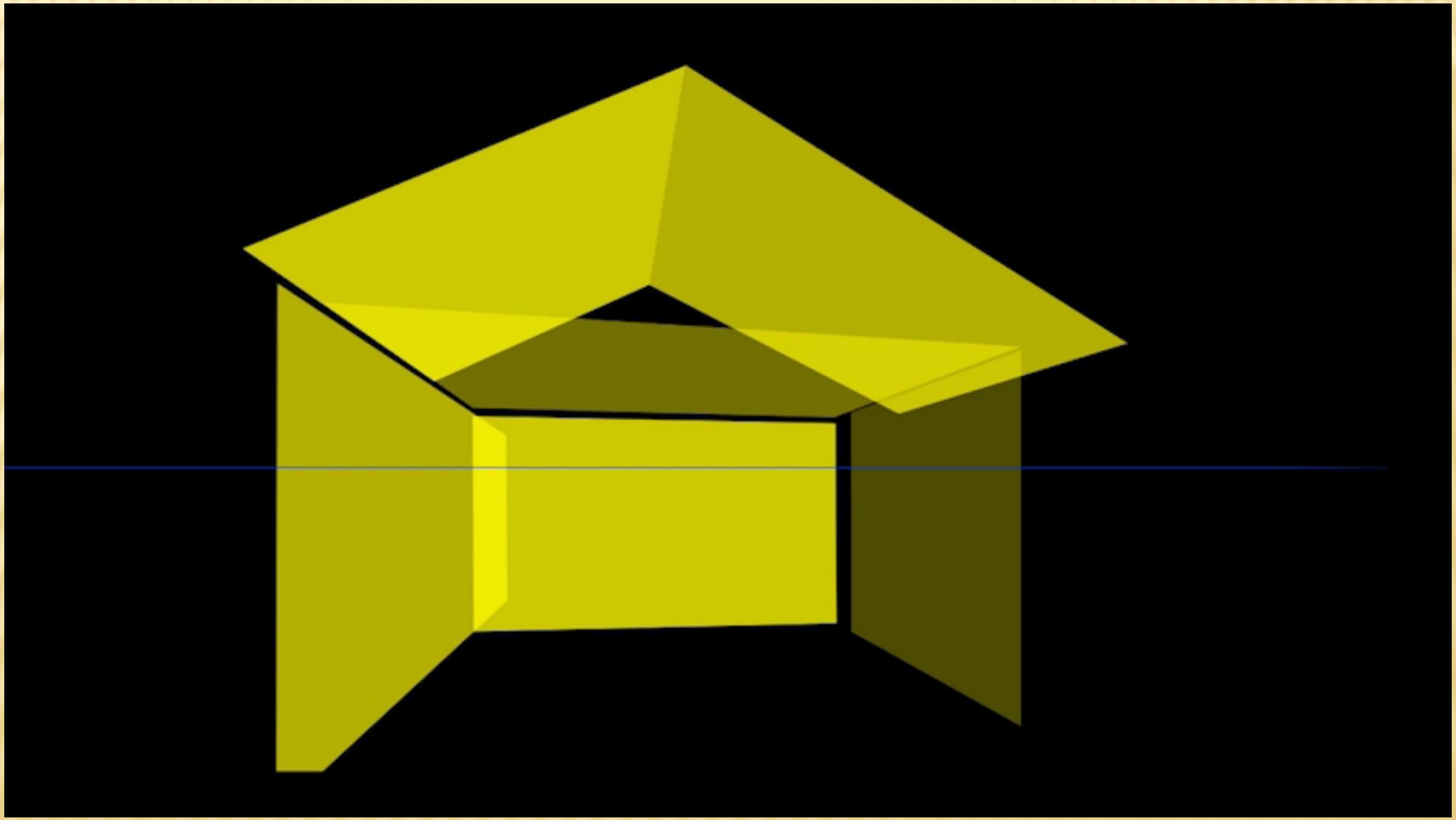
*"Planes define limits or boundaries; The **OVERHEAD PLANE** can be the **ROOF** that spans and shelters the interior"* [1]



*“The **CEILING PLANE** forms the upper enclosing surface of room”* [1]

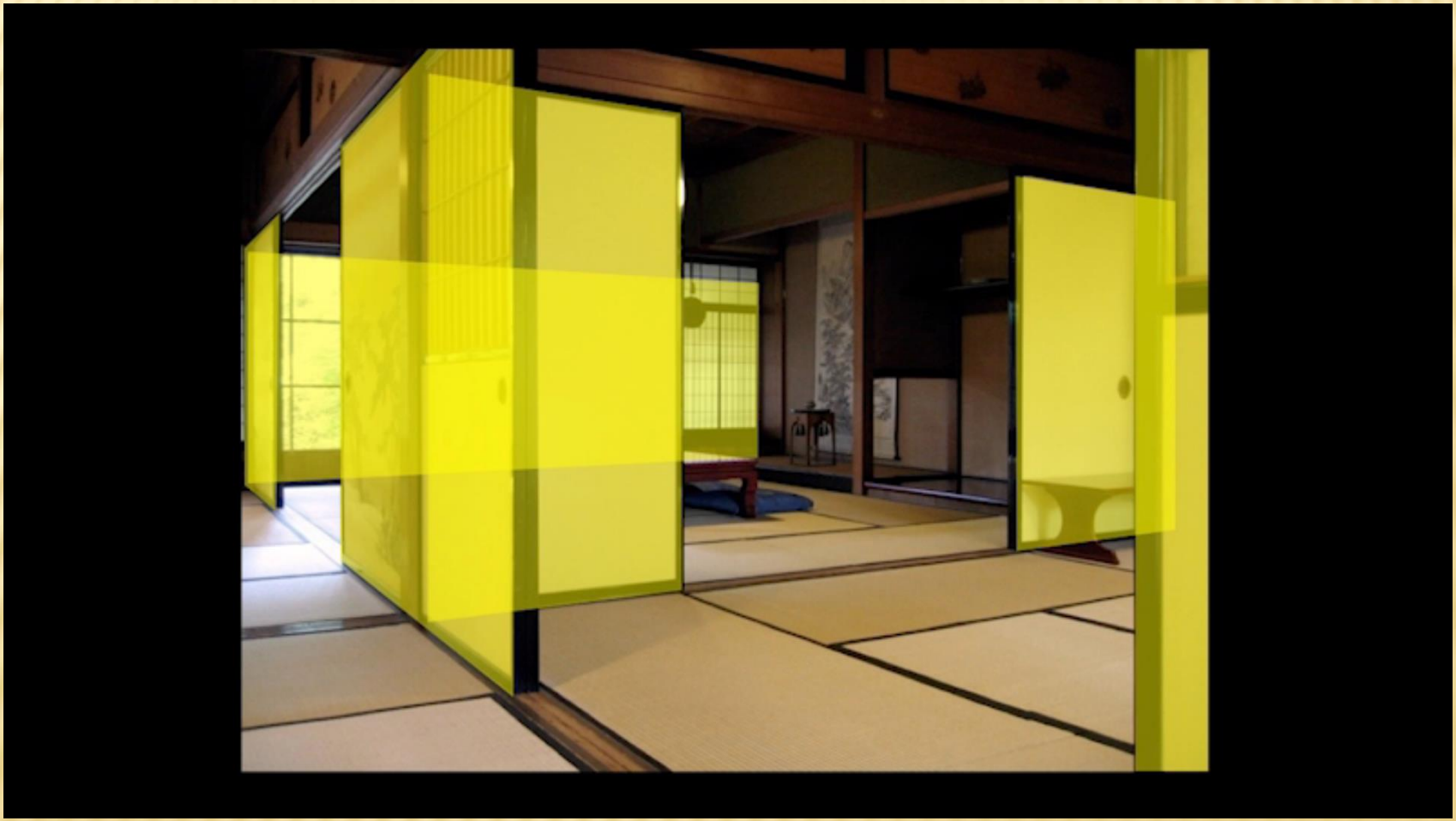


*“The **WALL PLANE** is active in our normal field of vision and vital to shaping and enclosing space* [1] ”

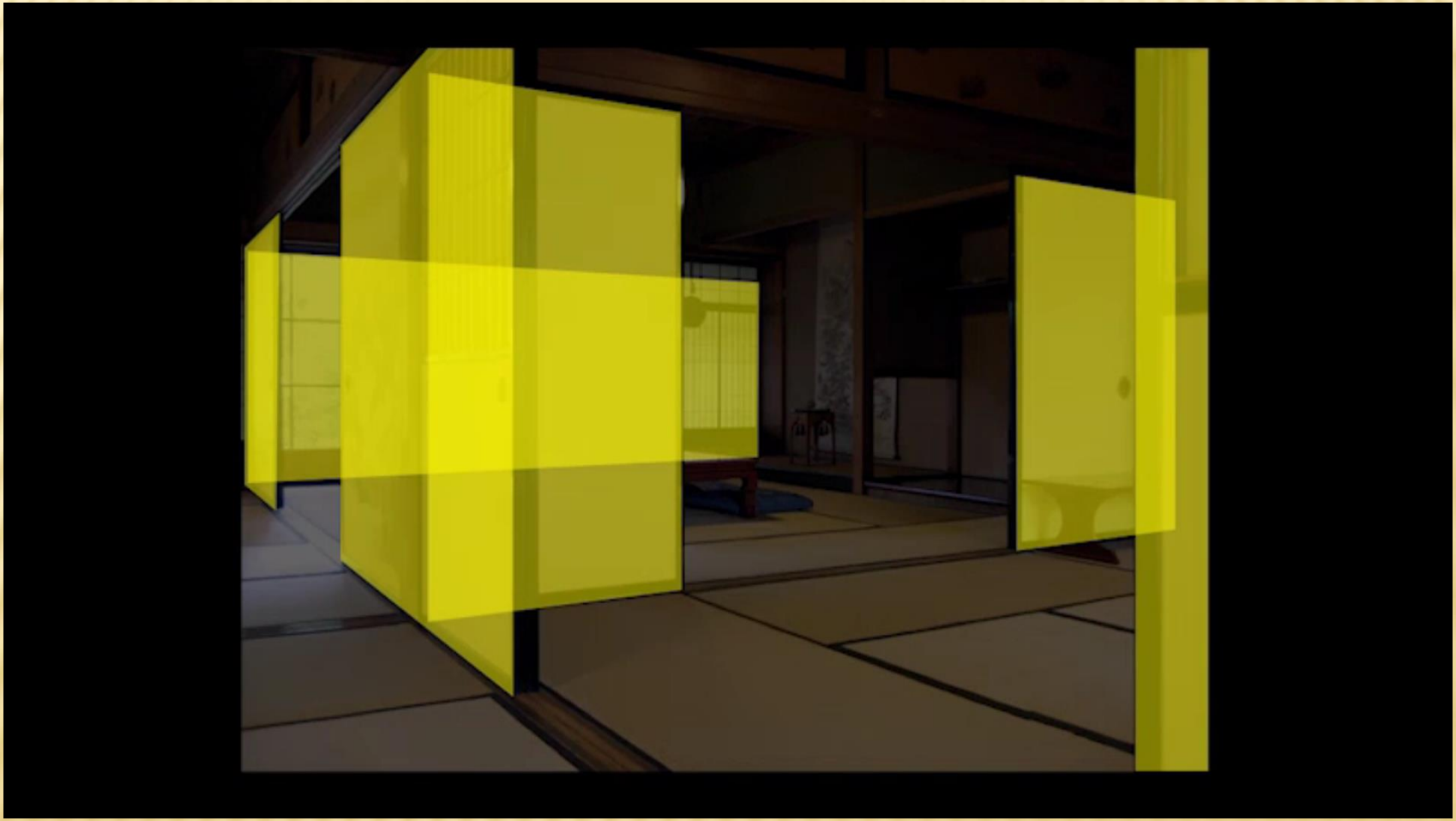


PLANE

*"Interior **WALL PLANES** govern size and shape of internal spaces"* [1]

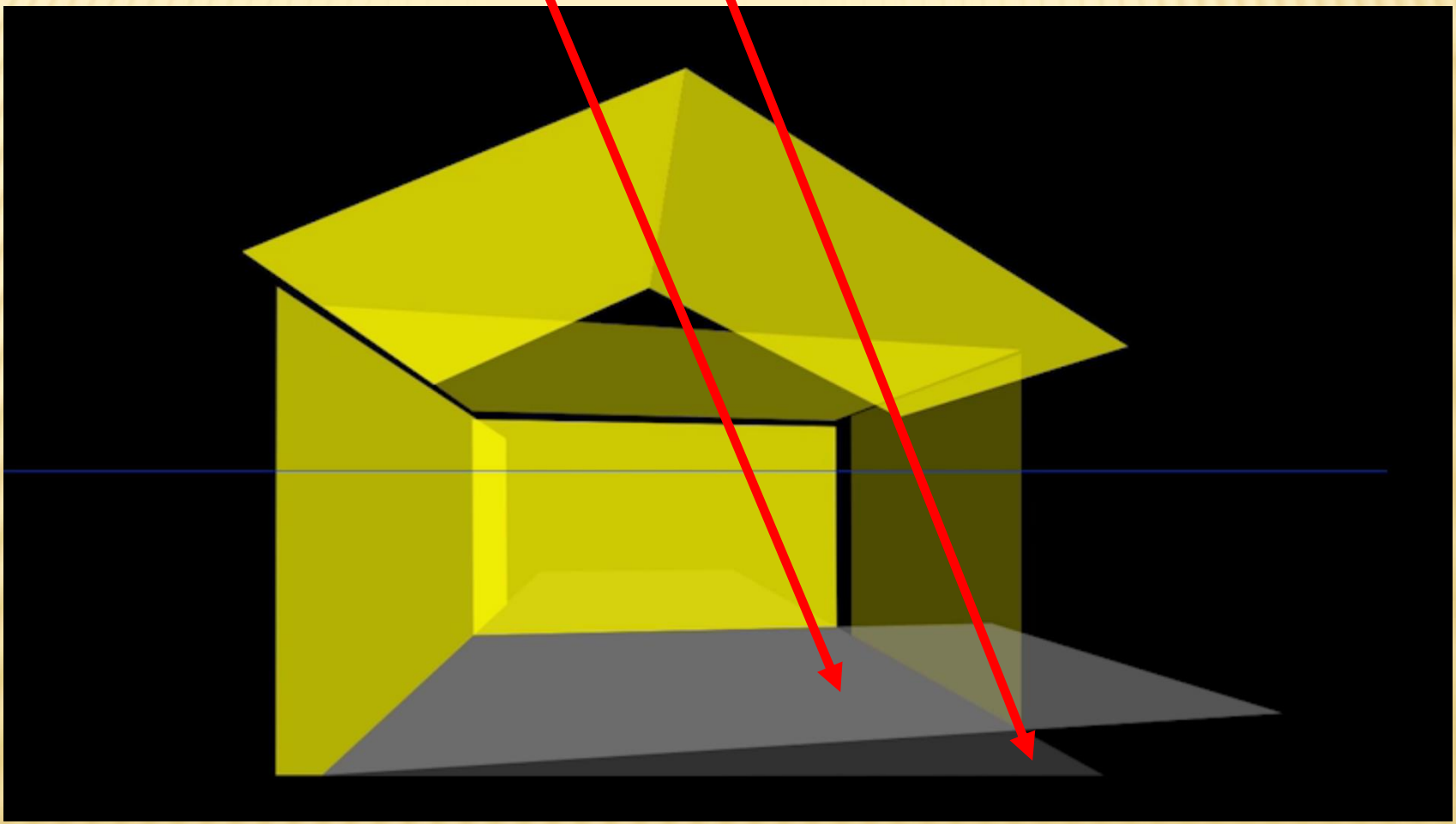


*"… their relationship to each other… the size and distribution of openings, determine the spaces they define … and the degree which **adjoining spaces** relate"* [1] (**ADJACENCIES**)



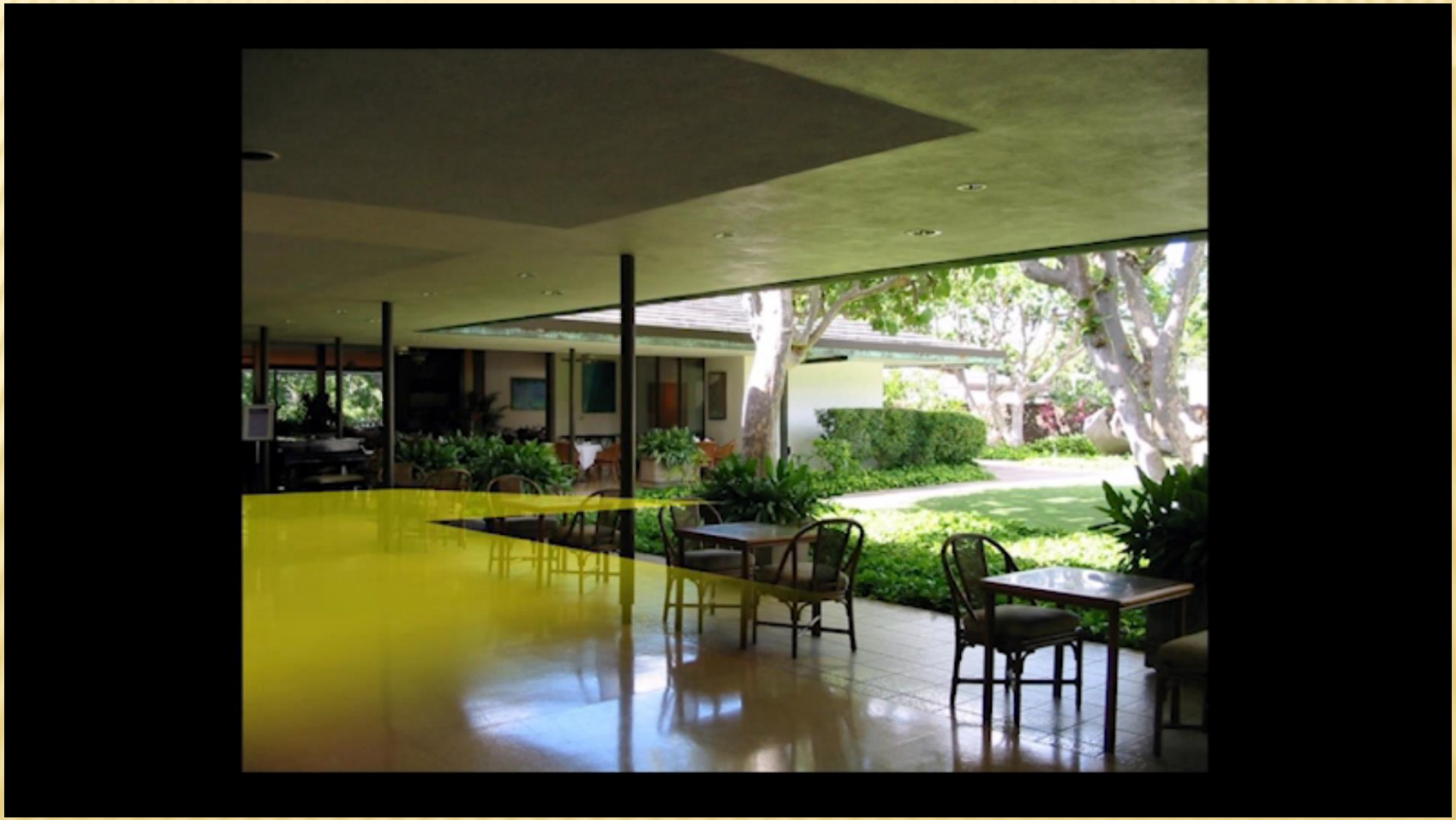
BASE PLANE

*"can be either the **GROUND PLANE** -- the physical foundation for building forms, or the **FLOOR PLANE** upon which we walk"* [1]

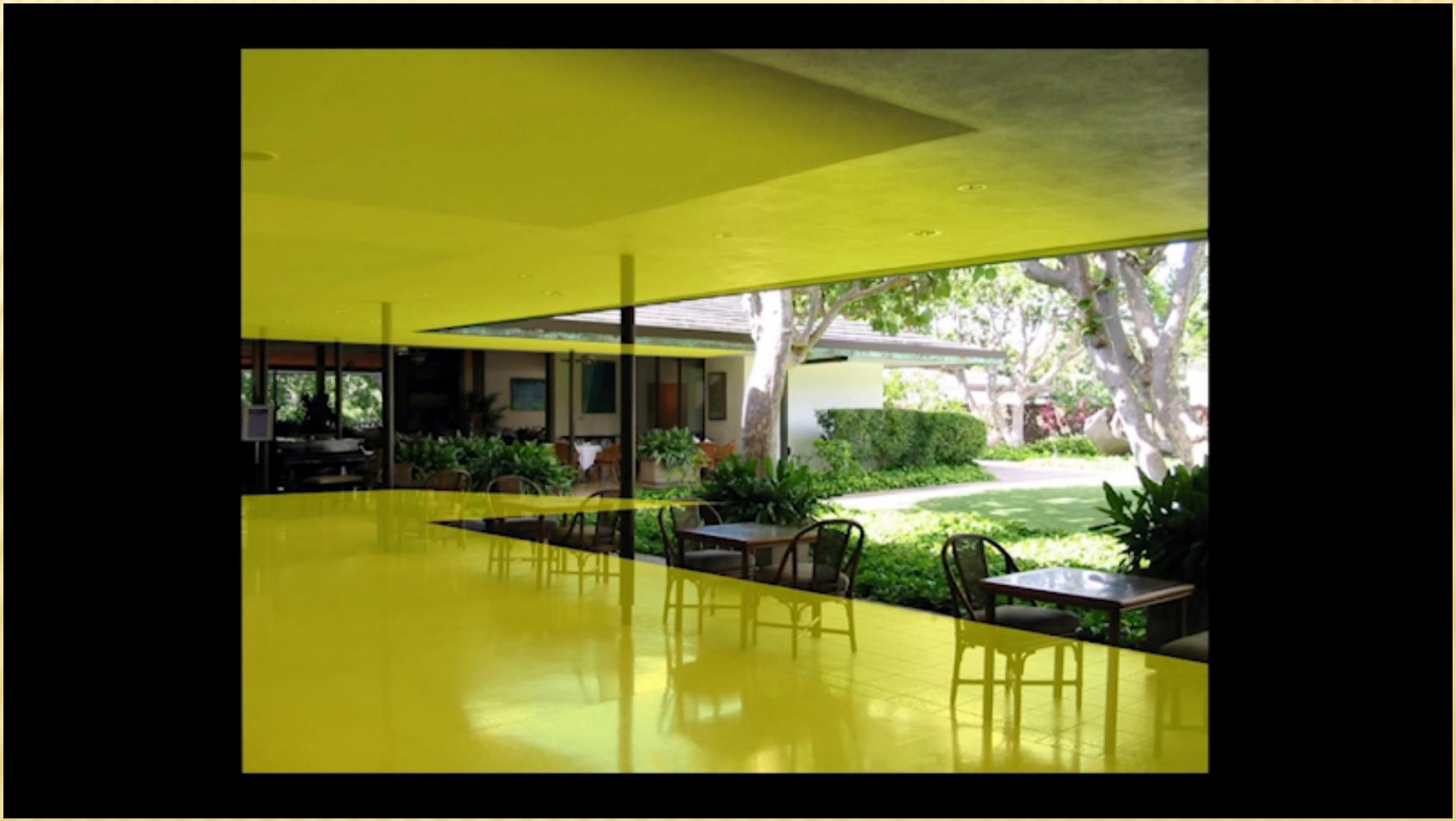


PLANE

*"The **FLOOR PLANE** sustains the force of gravity as we move around and place objects"* [1]



*"... together with the **OVERHEAD CEILING PLANE**, it can define a spatial zone without walls"* [1]

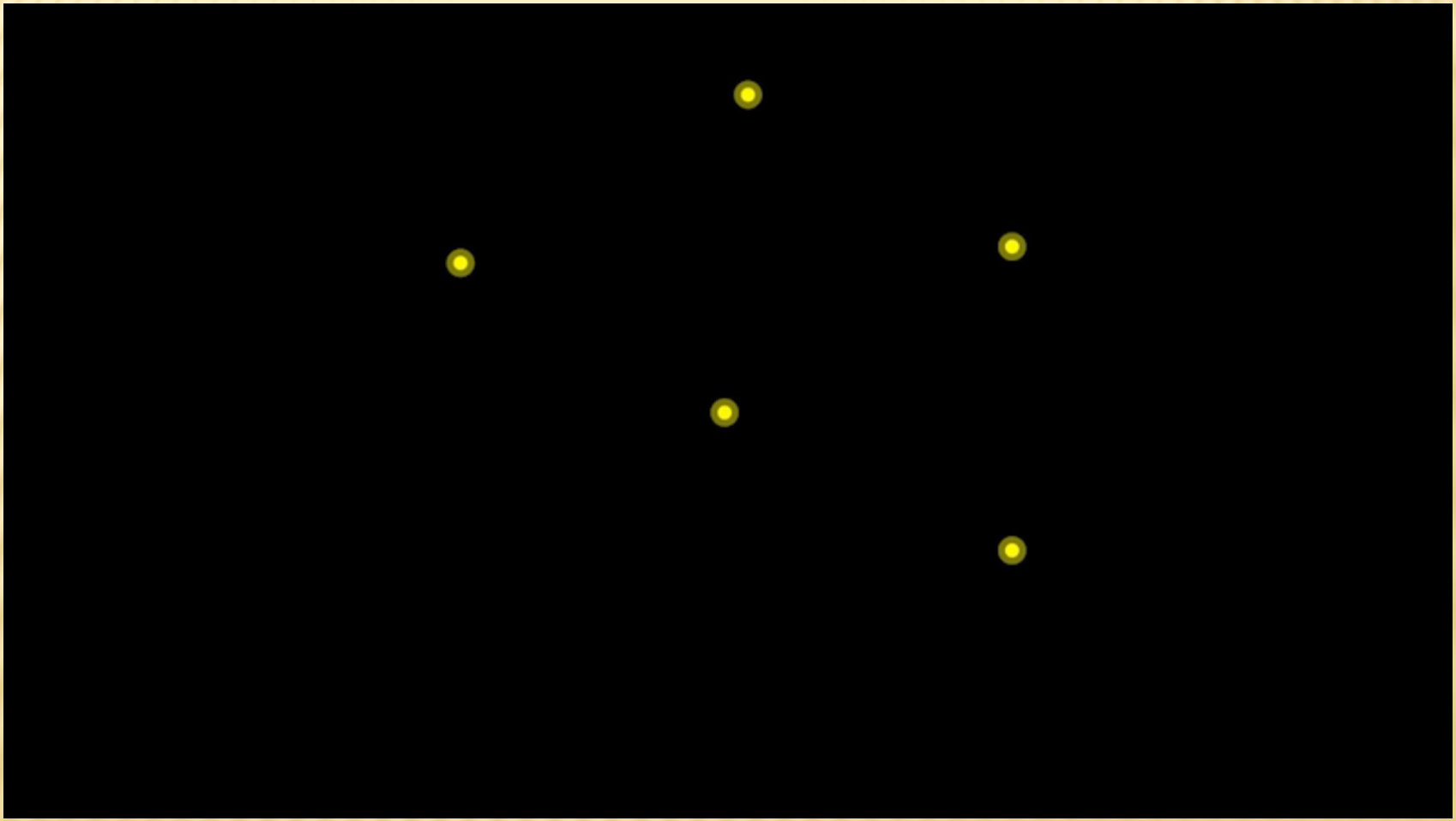


PLANE

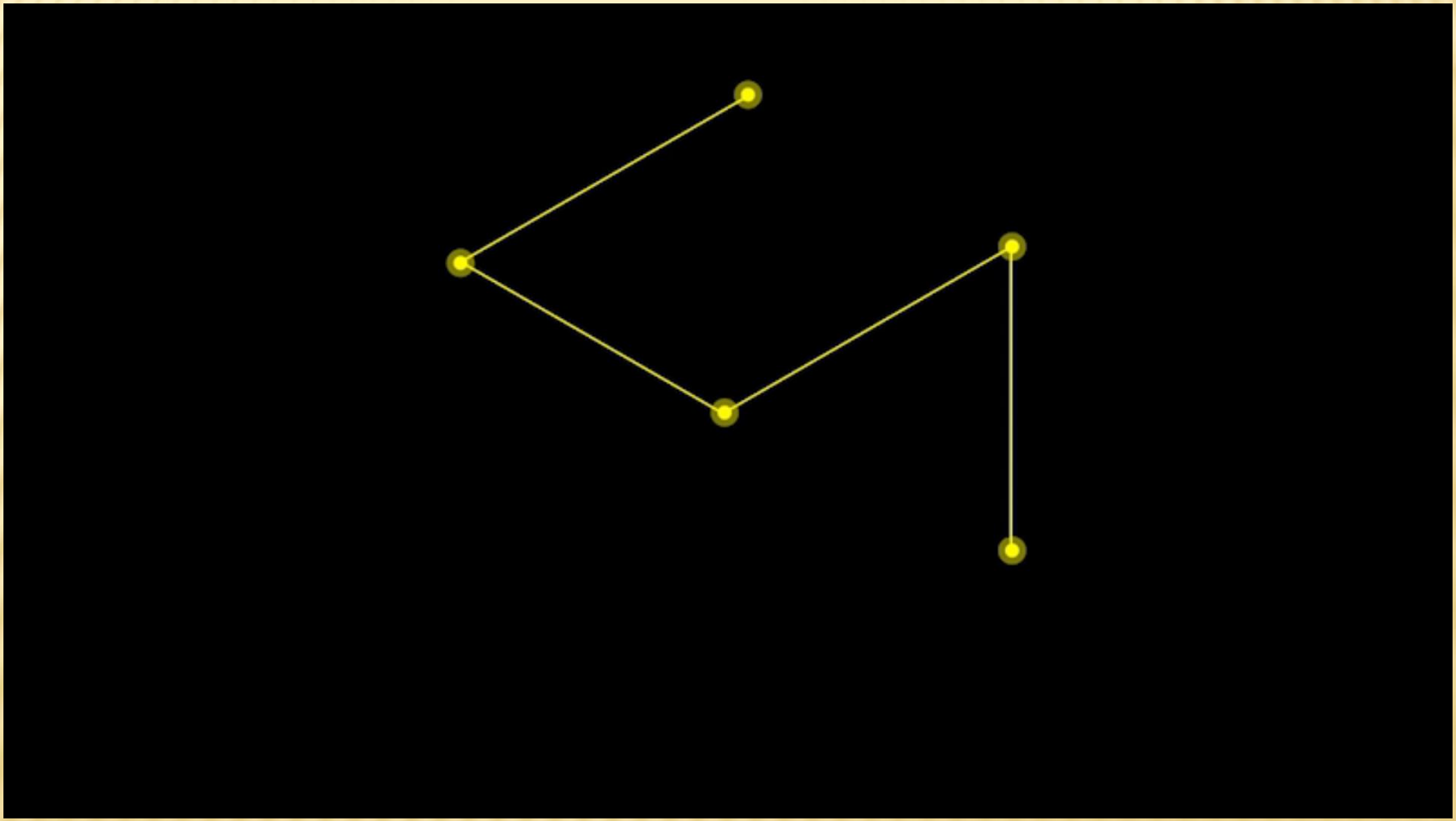
*"Façades serve as walls that define courtyards, streets, and public gathering places like squares (**PIAZZA**) and marketplaces"* [1]

VOLUME

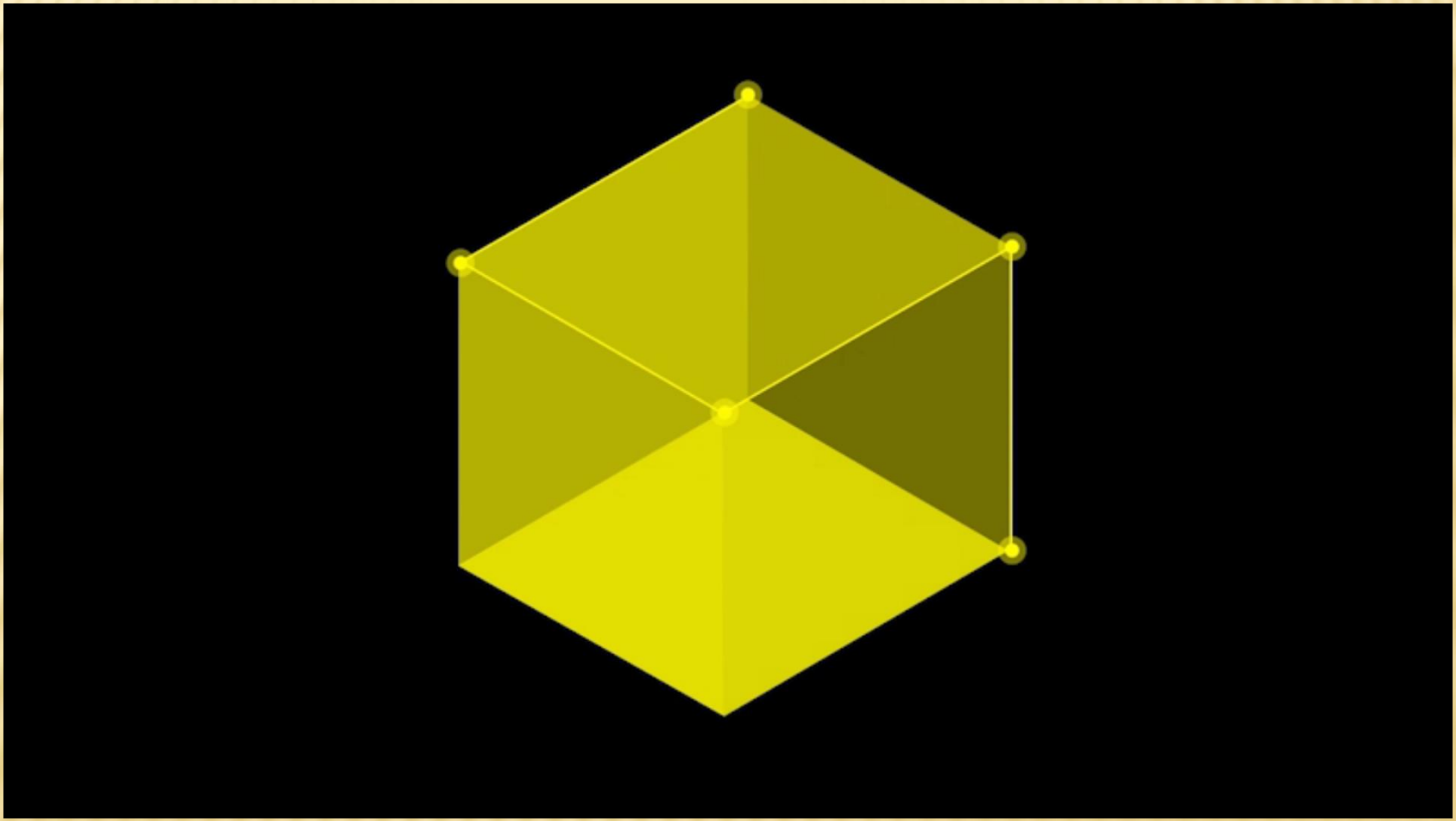
*"All volumes consist of points/vertices where **PLANES COME TOGETHER...***



*… or lines/edges where two **PLANES MEET”** …*



*... or planes which define **LIMITS or BOUNDARIES** of a volume"* [1]



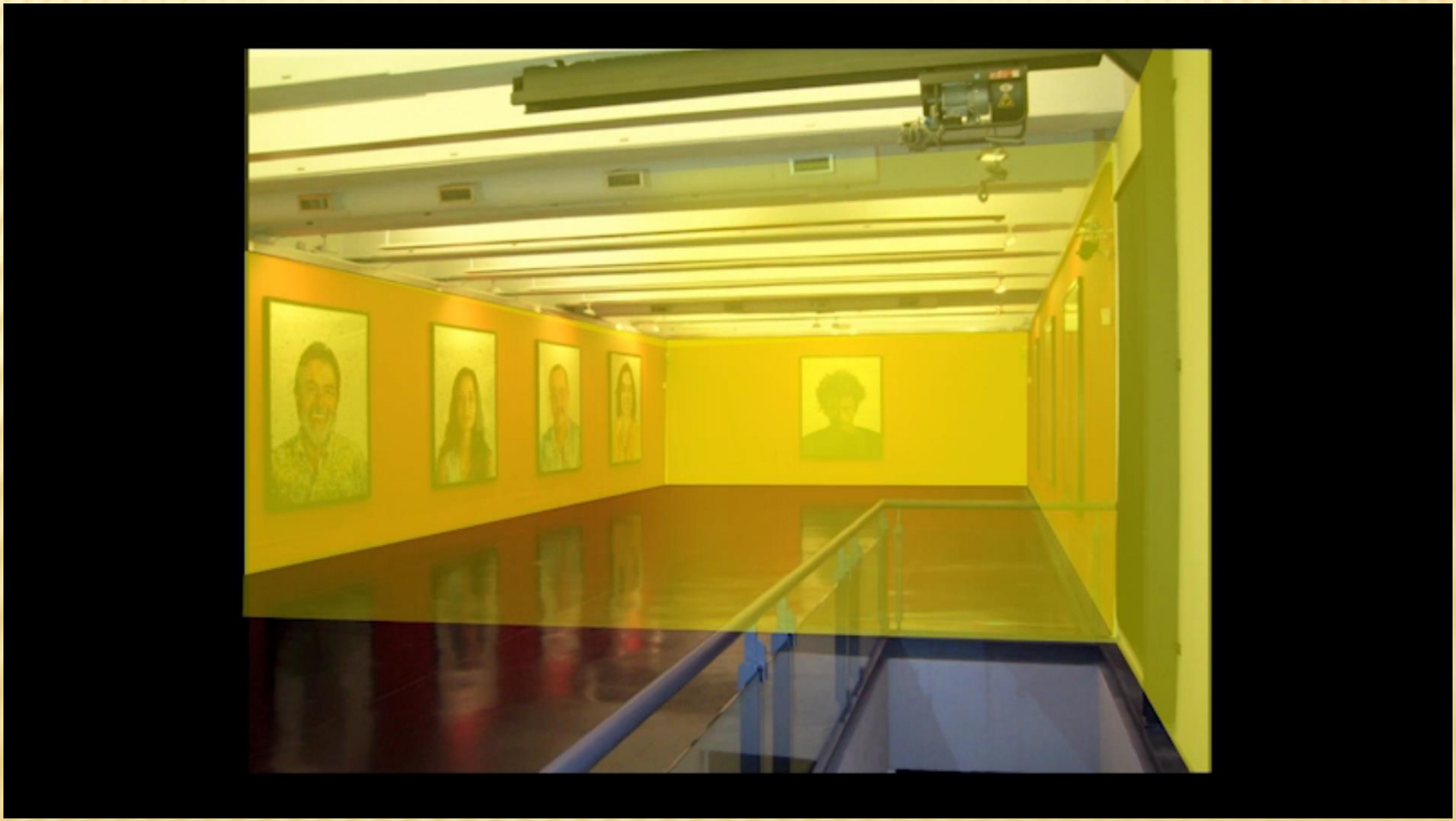
VOLUME

*"a **VOLUME** can be either: (1) A solid . . .*

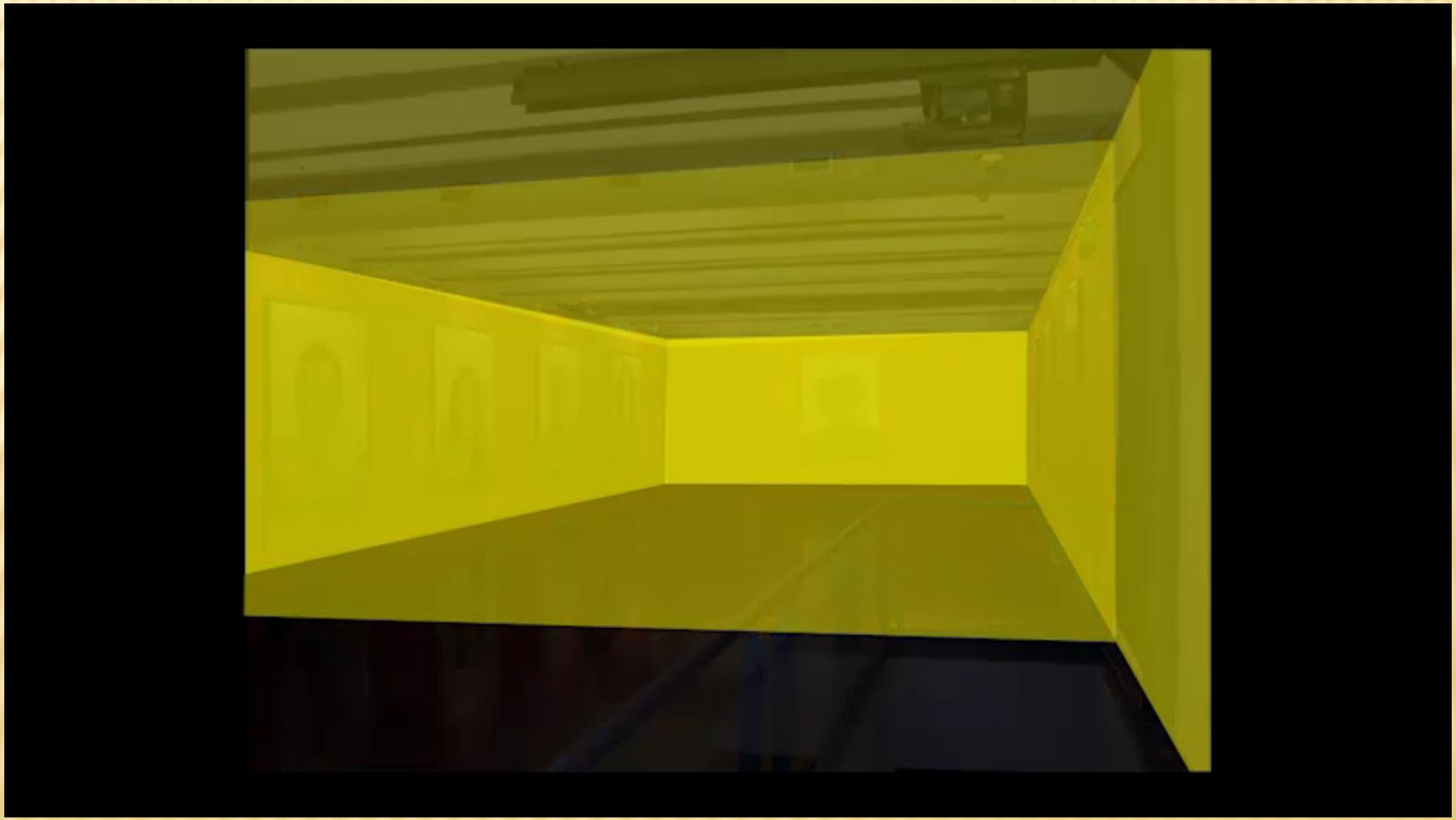
Travel to Narita Japan, 2013

... (2) ***SPACE DISPLACED by MASS*** *such as a building that stands as an object in the landscape . . .*

*… or (3) A **VOID SPACE** contained or enclosed by planes such as a room contained and defined by wall, floor, and ceiling planes”* [1]

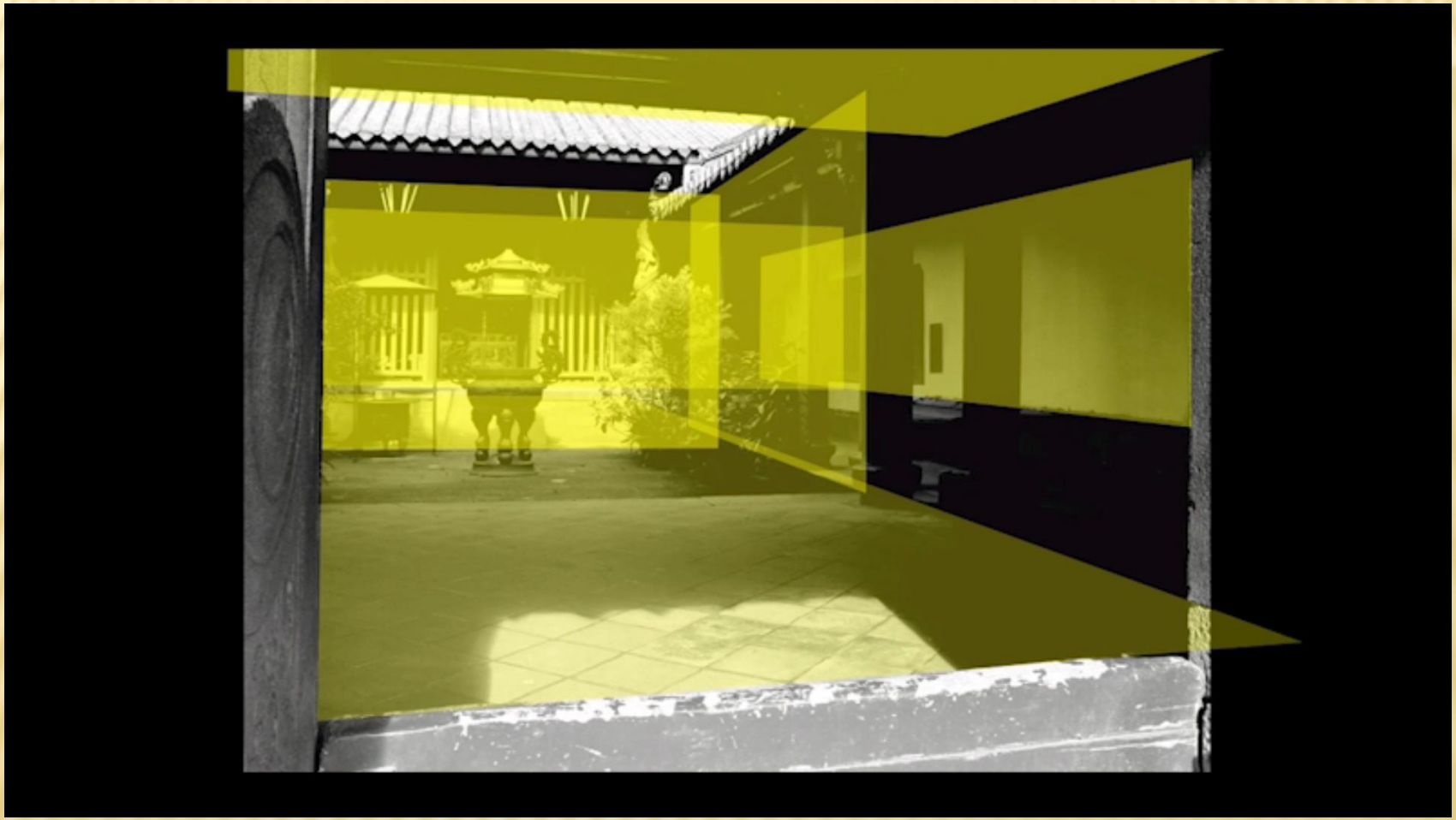


VOID SPACE



VOLUME

*"Many spaces are not discrete volumes, rather they **merge with, or overlap adjacent spaces** … retaining their identity as singular entities"* [1]



VOLUME

"Important to discern readings of space in the environments encountered or imagined" [1]

LINE → PLANES and VOLUMES

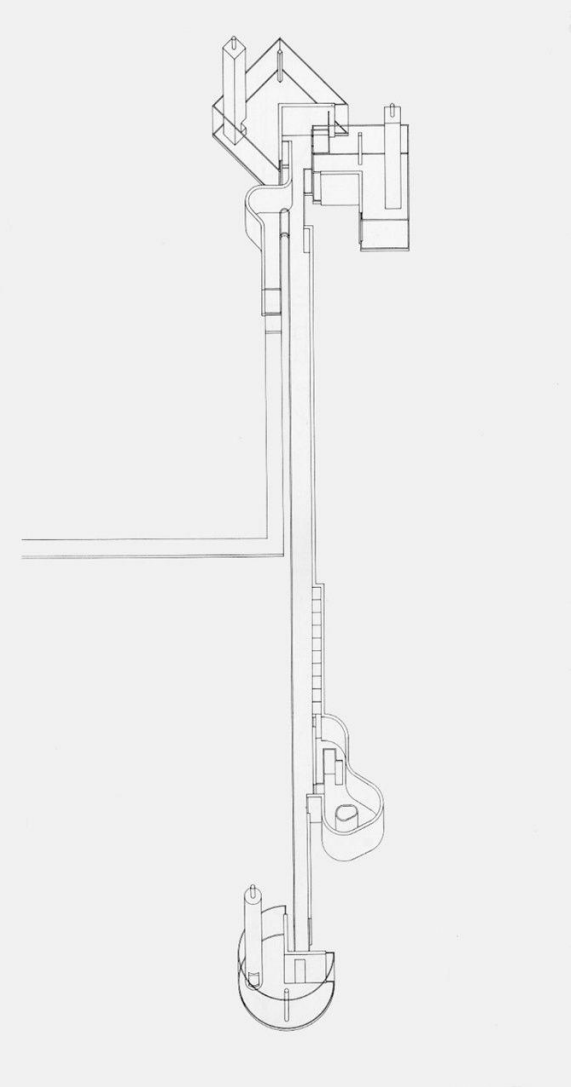
"Lines provide support as posts and columns, and carry loads across space as beams …

LINE → **Perceived** VOLUMES

*… and can form a 3D **structural FRAME** for architectural space”* [1]

LINEAR VOLUME

"Although architectural spaces exist in three dimensions, it could be linear in form to accommodate the path of movement through a building, and link spaces" [1]

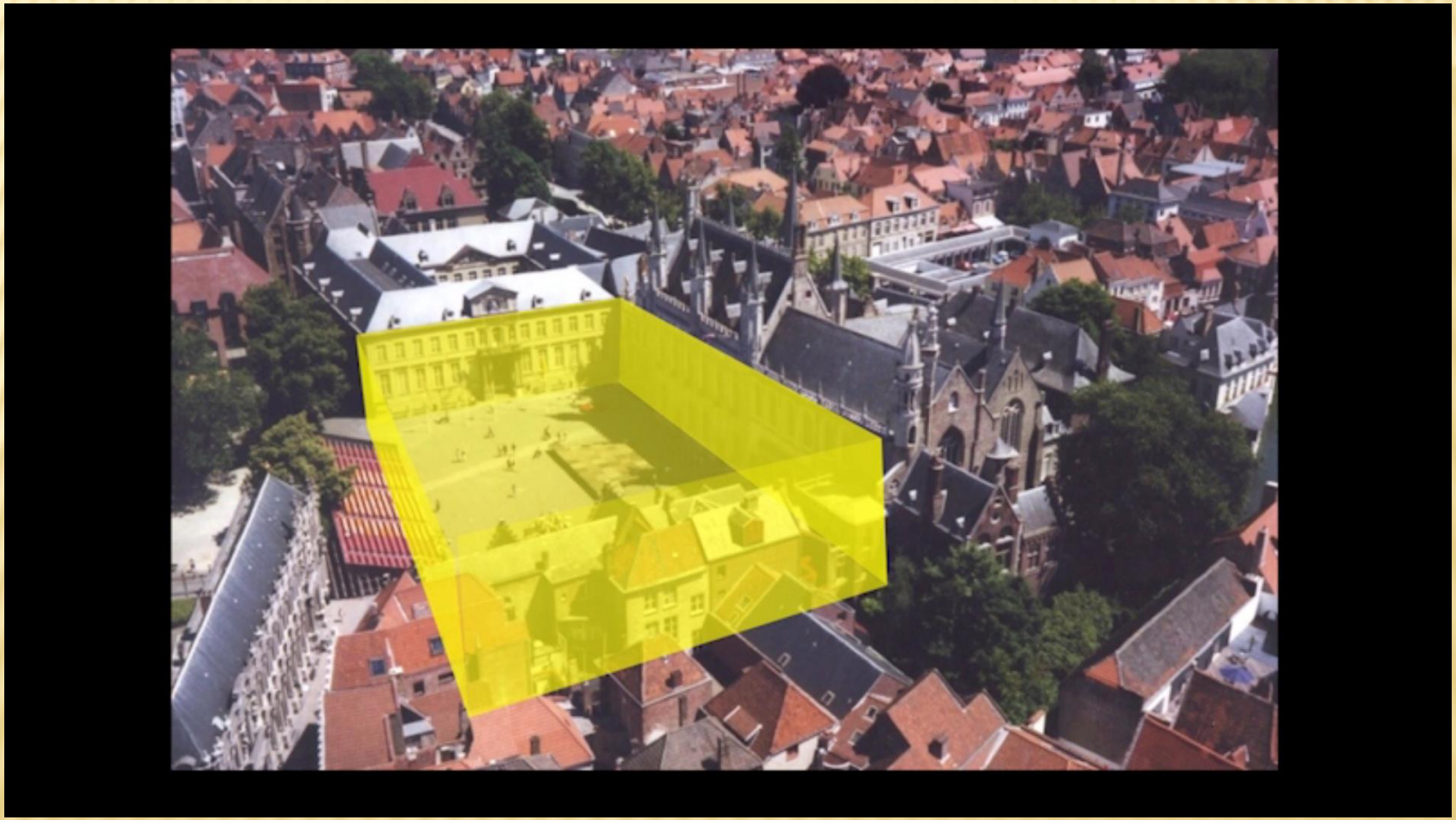


House 10, 1966, John Hejduk

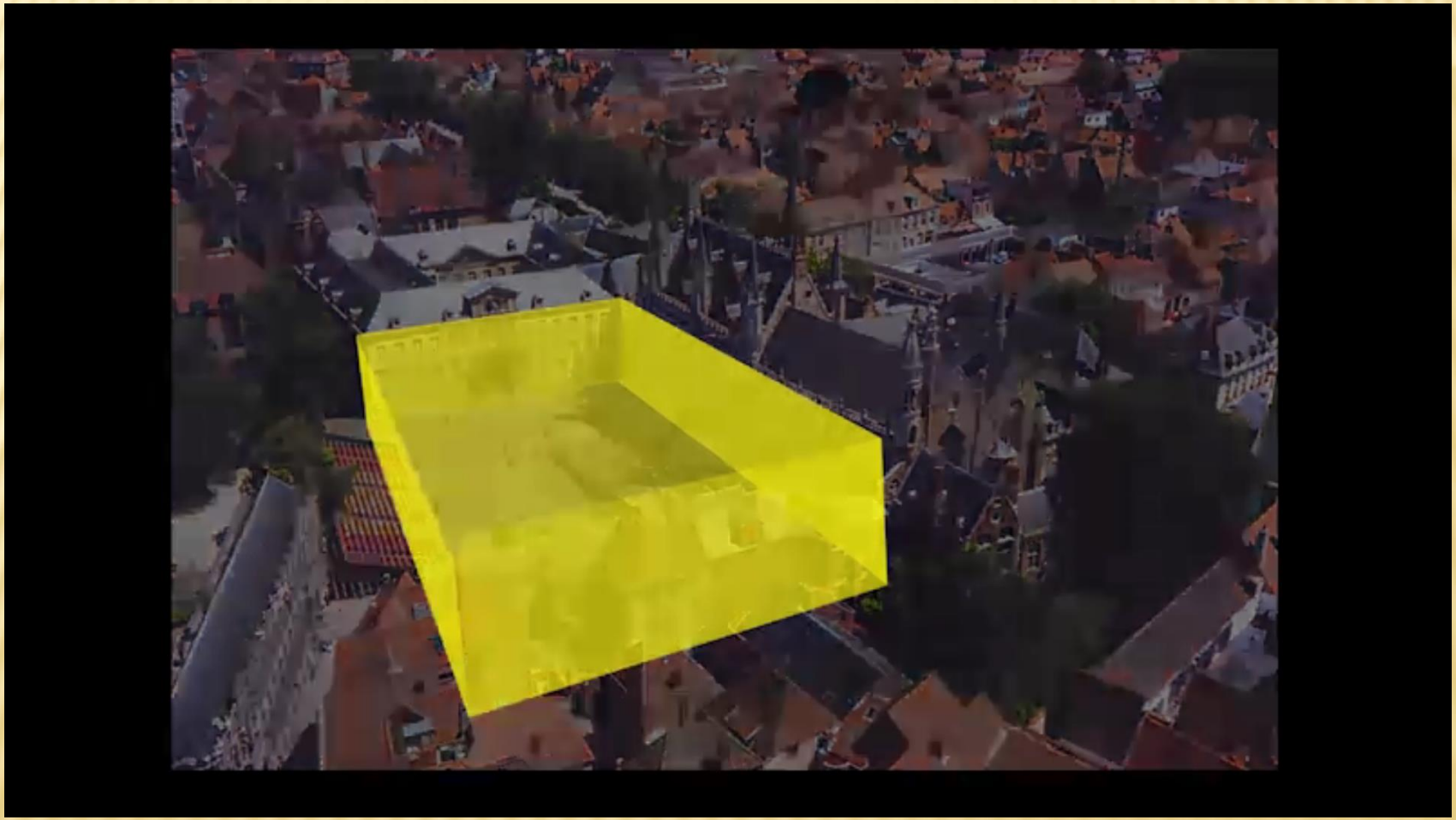
Wall House 2 by John Hejduk, Thomas Muller, Raimann Architekten & Otonomo Architecten, 2001, Netherlands

VOLUME

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



Masses Define Volumes of Space



LINEAR VOLUME

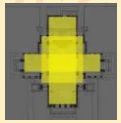
Here, *"repetitive spaces organize along the circulation path.*
This building also adapts to the site" [1] like in Frank Lloyd Wight's Organic Design

Cornell University undergraduate housing by Richard Meier, New York 1974

ORGANIC ARCHITECTURE DESIGN PRINCIPLES

Frank Lloyd Wright

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

© JT Wunderlich PhD

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

ARCHITECTURE = MUSIC

Arts & Crafts, Italy, JAPAN

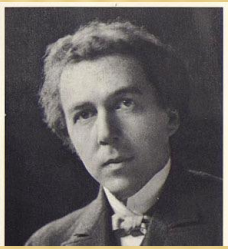
MUSICIAN Preacher FATHER

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

See more on ORGANIC ARCHITECTURE **DESIGN PRINCIPLES:**

Wunderlich Lecture Series on ***"The Life and Work of Frank Lloyd Wright"*** ©



Frank Lloyd Wright
1867-1958

ARCHITECTURE DESIGN THEORY

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