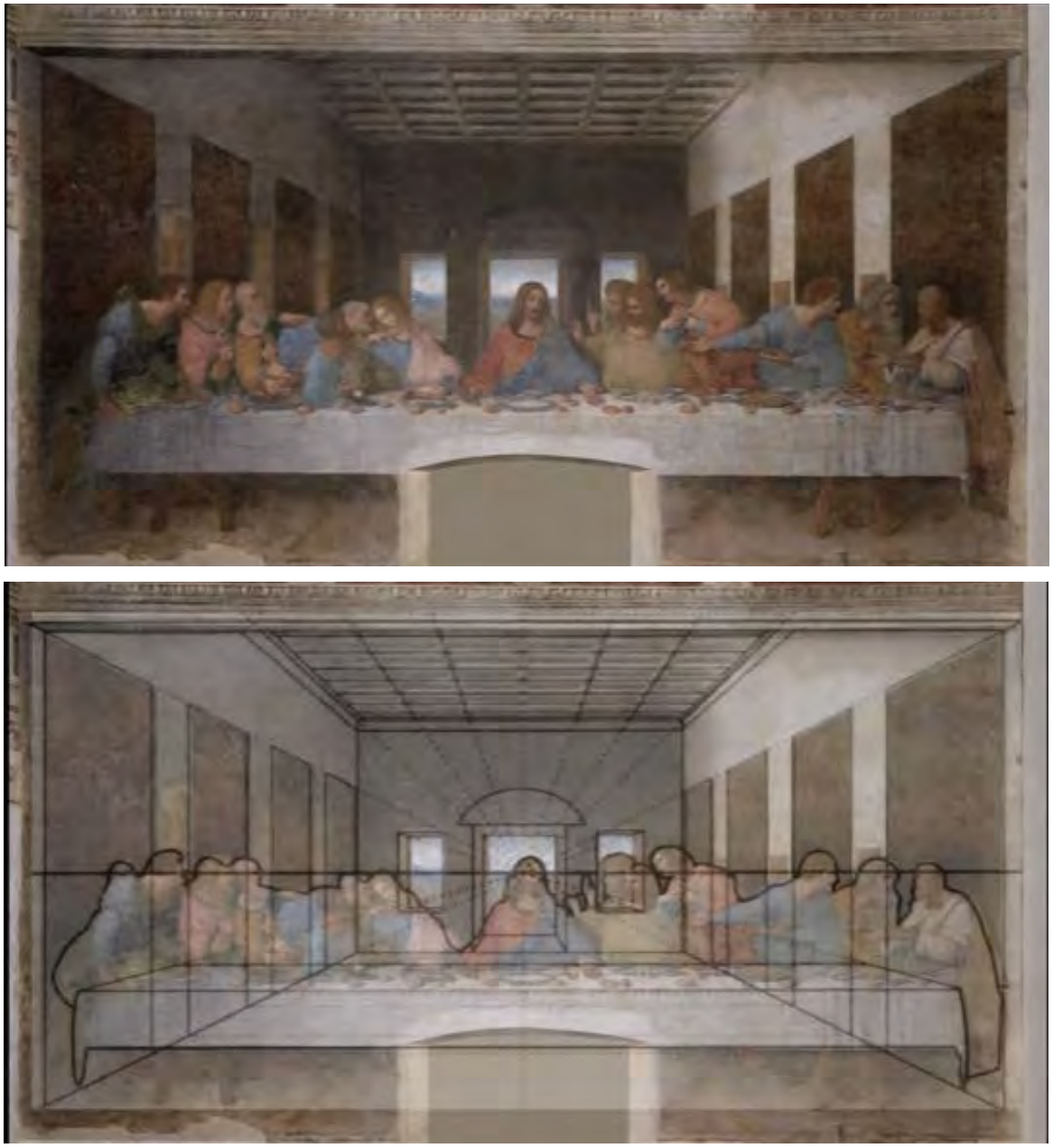
G:1

linear perspective

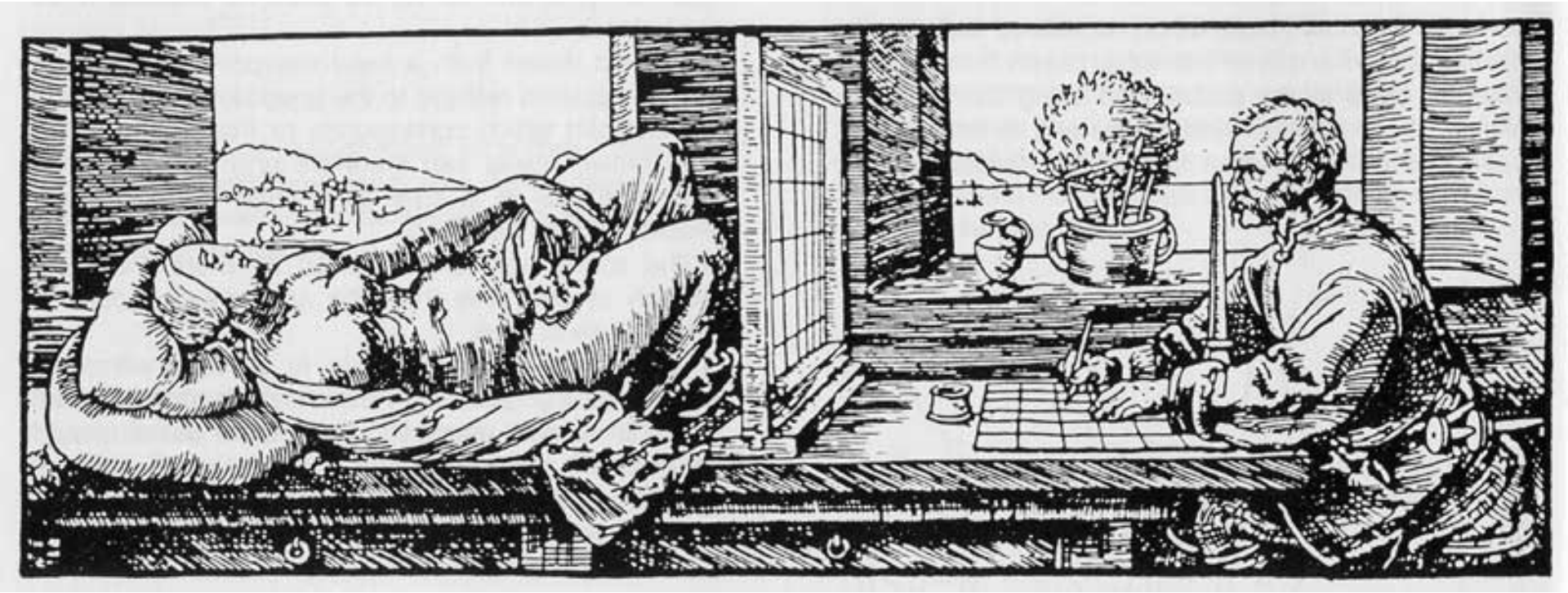
Announcement of the Death to the Virgin, Duccio de Buoninsegna, 1308-1310



The Last Supper, Leonardo da Vinci, 1495. Milan, Italy

Filippo Brunelleschi (1377 – April 15, 1446) was one of the foremost architects and engineers of the Italian Renaissance.

He (re)discovered linear perspective around 1420.



Man drawing a recumbent woman

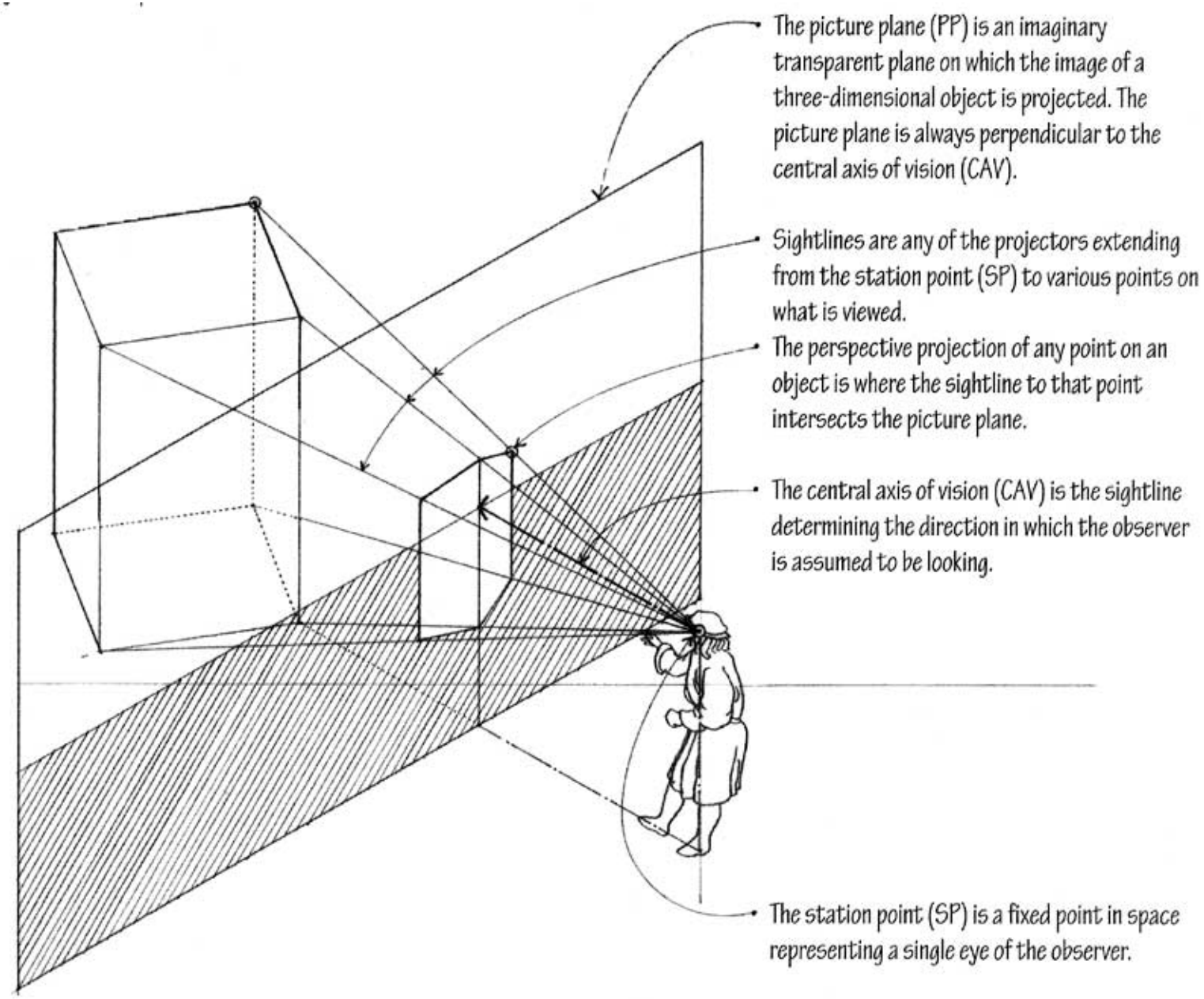
Albrecht Durer, “Manual of measurement”,1525

Linear perspective:

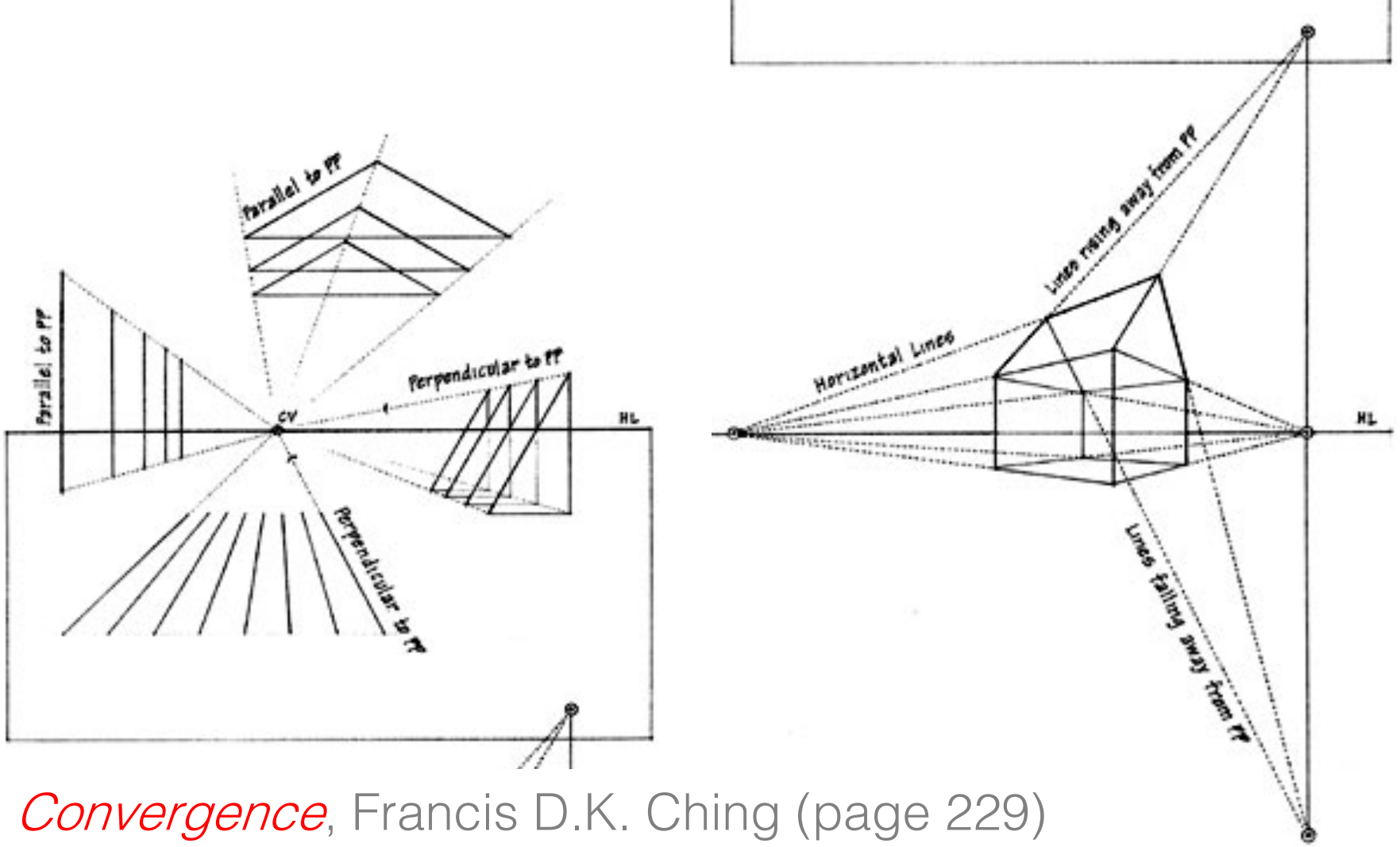
_the linear perspective is the art and science of *describing three-dimensional volumes and spatial relations on a two-dimensional surface* by means of lines that converge as they recede into the depth of the drawing (Ching, p. 223).

_a type of perspective used by artists in which the relative size, shape, and position of objects are determined by drawn or imagined lines converging at a point on the horizon.

_a form of perspective in drawing and painting in which parallel lines are represented as converging so as to give the illusion of depth and distance.



Picture plane, Francis D.K. Ching (page 225)



Convergence, Francis D.K. Ching (page 229)

_each set of of parallel lines has its own vanishing point

1_lines parallel to the picture plane

2_lines perpendicular to the picture plane

3_lines oblique to the picture plane

To remember:

+ station point (SP)
+ central axis of vision (CAV)
+ ground plane (GP)
+ picture plane (PP)
+ ground line (GL)
+ center of vision (CV)
+ horizontal line (HL)
+ vanishing points (VP)

FORESHORTENING - apparent change in form (shortening) an object undergoes as it rotates away from the picture plane.

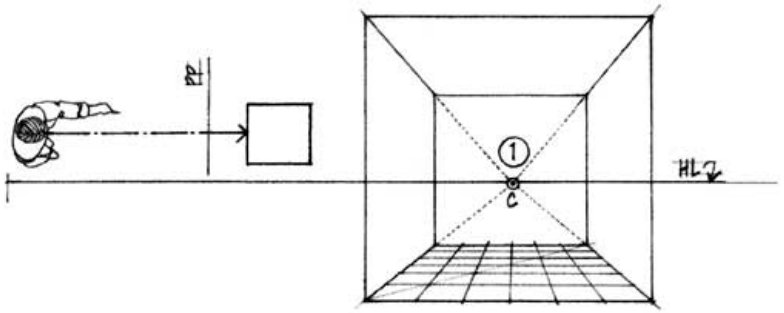
CONVERGENCE – the apparent movement of parallel lines toward a common vanishing points

Sightlines are any of the projectors extending from the station point (SP) to the various points what is viewed.

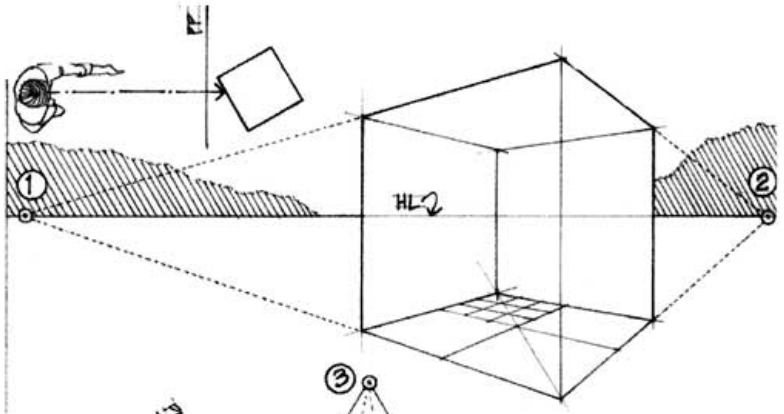
The perspective projection of any point on an object is where the sightline to that point intersect the picture plane.

3 perspective types, francis d.k. ching (pg. 249)

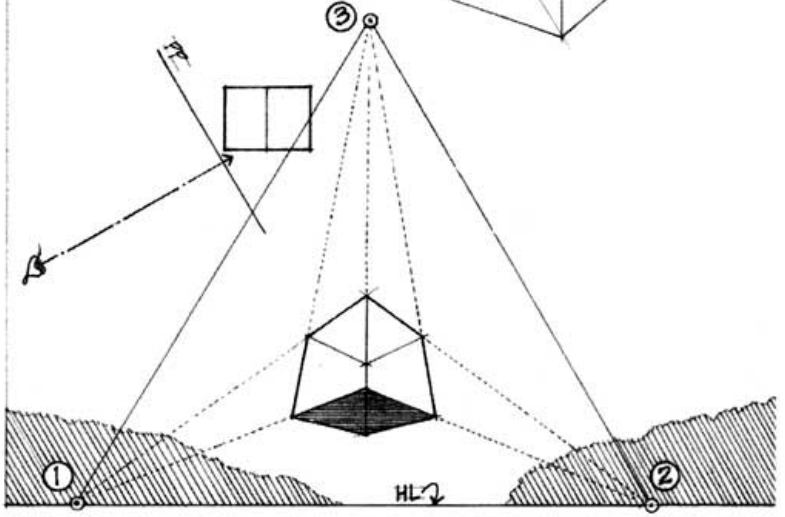
One-point perspective – one VP

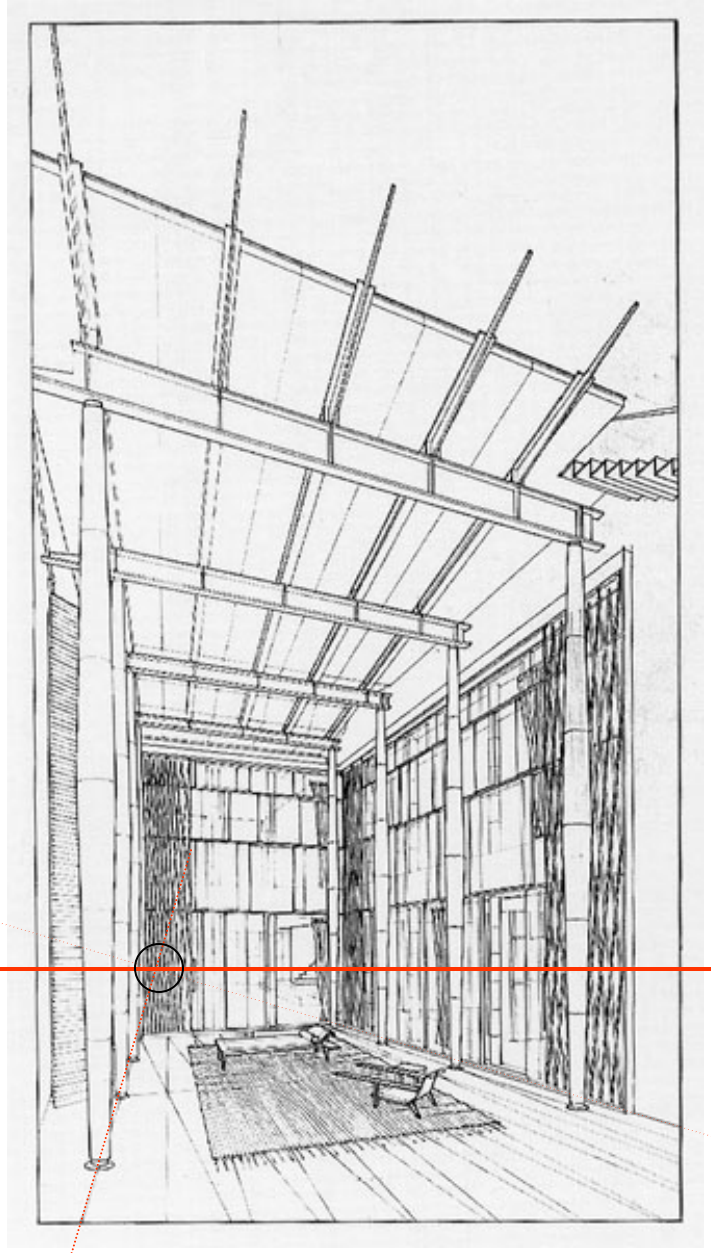


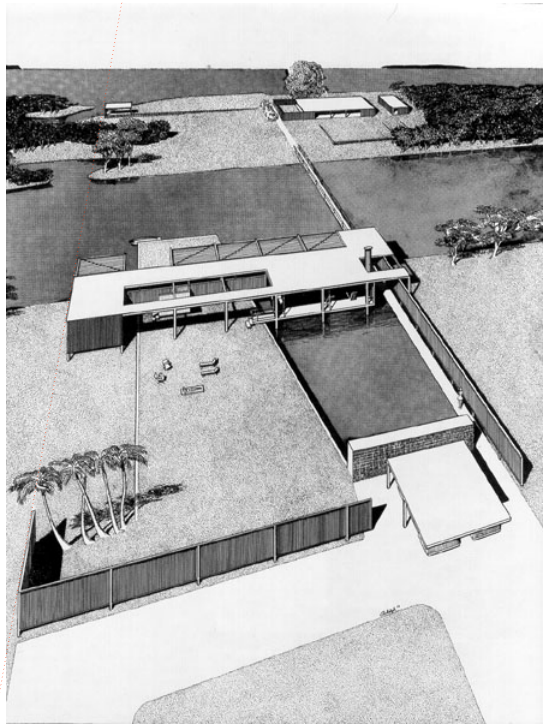
Two-point perspective – two VP



Three-point perspective – three VP







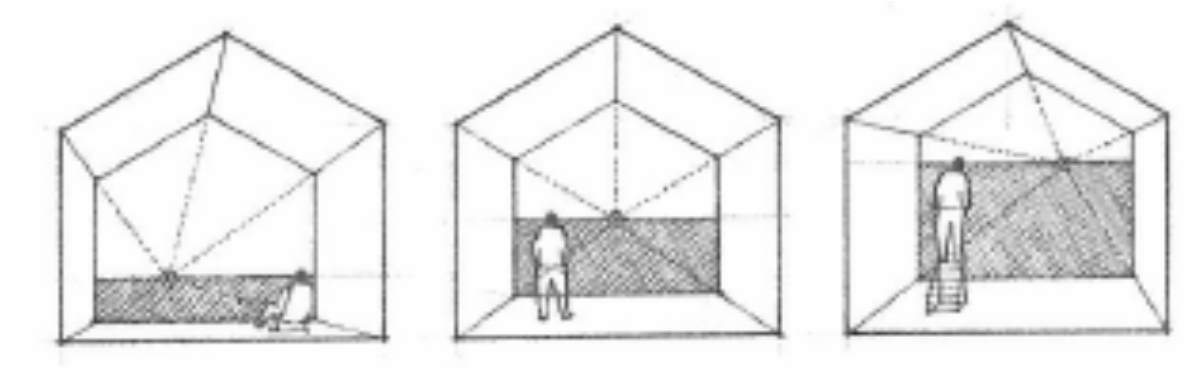
location of horizon line

One point perspective

Perspective setup (D.K.Ching, pg. 251):

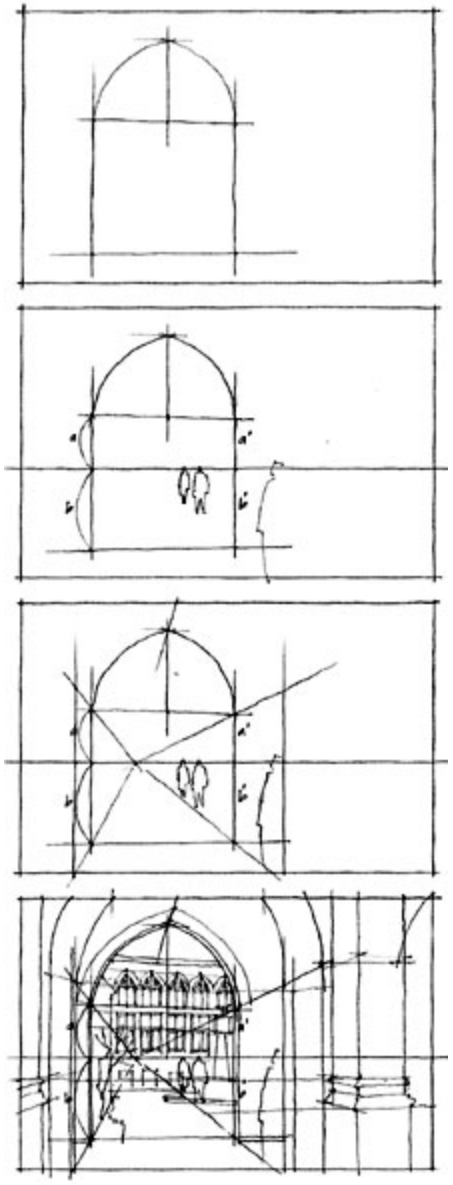
+ establish the ground line (GL) and the horizontal line (HL)

+ establish the spectator's center of vision on the horizontal line (CV)



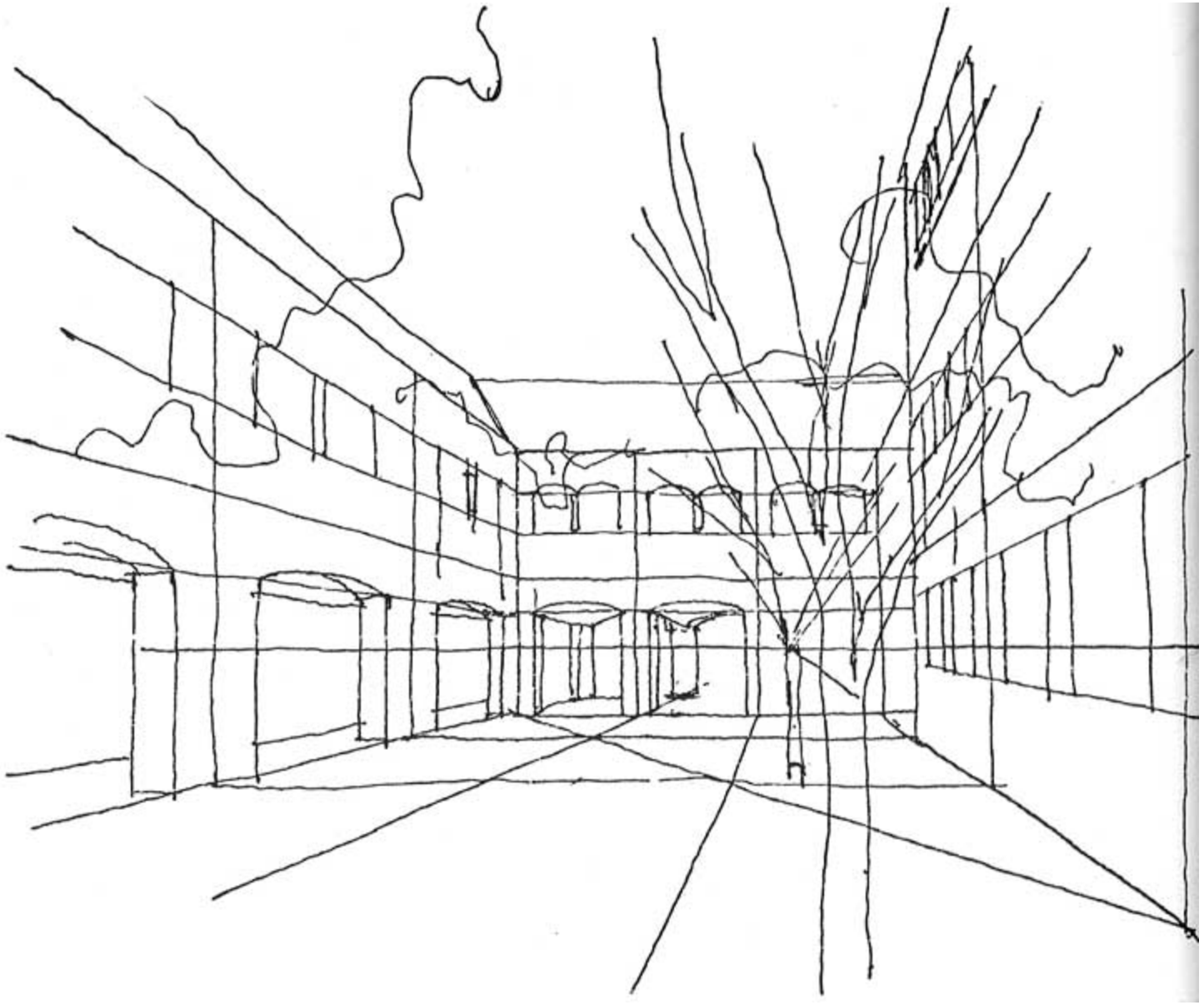
Note: Measuring line (ML) (D.K.Ching, pg. 238):

+ any line that can be used to measure through lenghths in a projection drawing

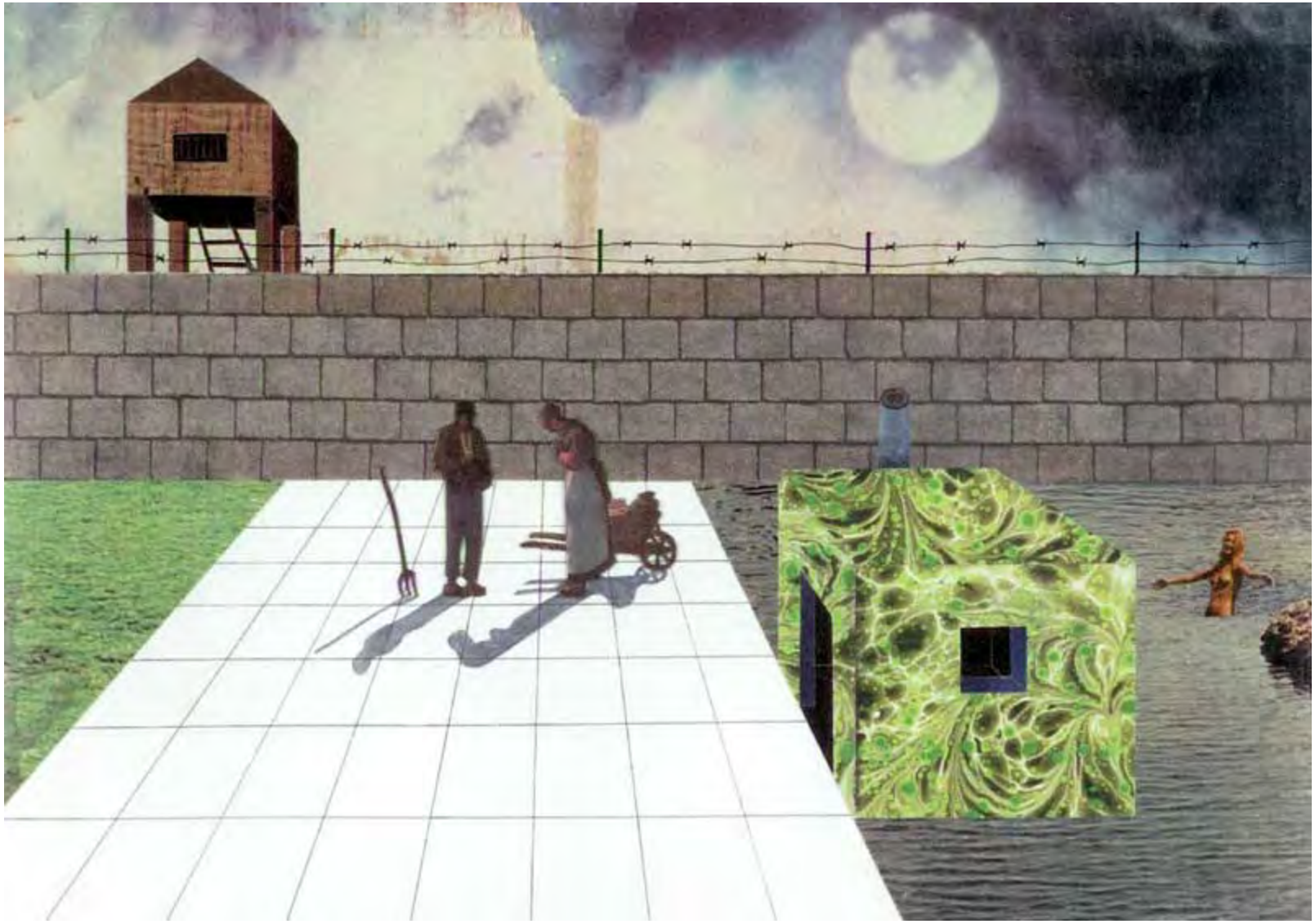


One point perspective construction, Francis D.K. Ching

One point perspective construction, Francis D.K. Ching



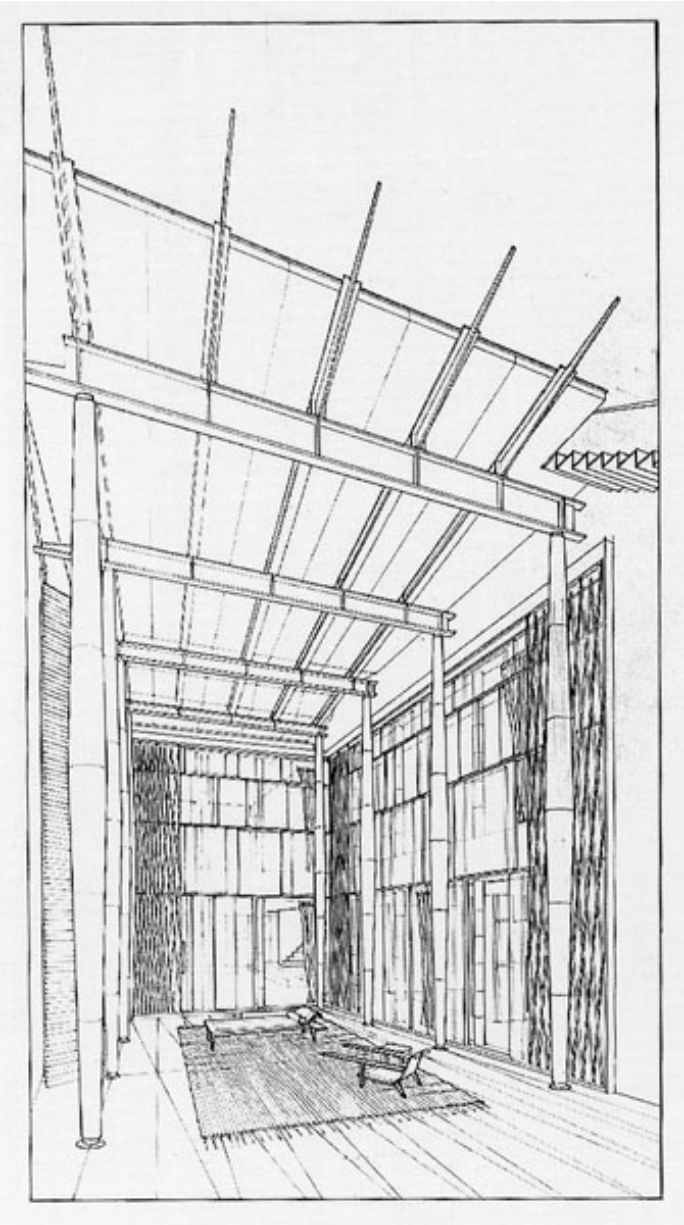
One point perspective construction, Paul Laseau



Exodus: the allotments, Rem Koolhaas & Zoe Zenghelis

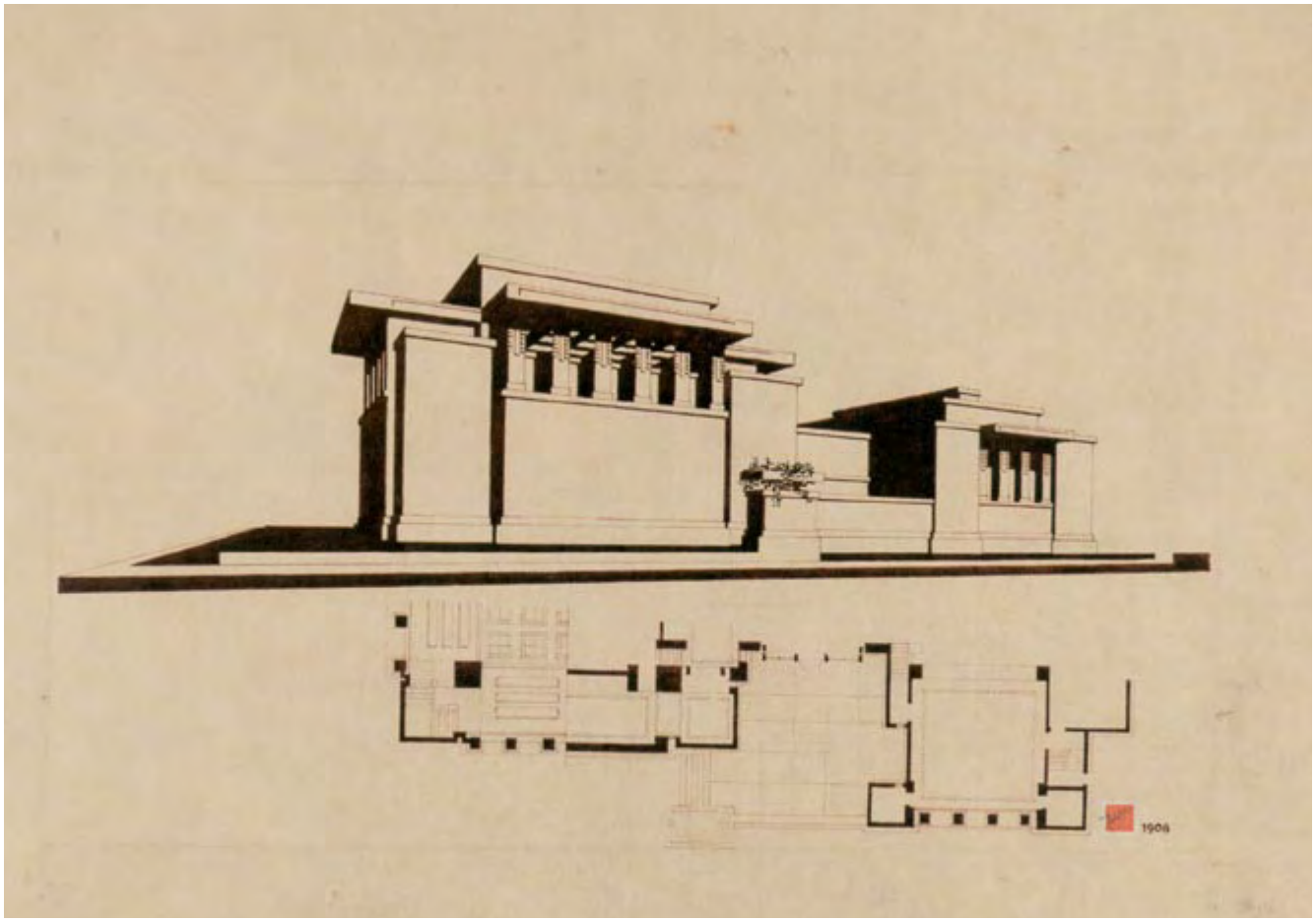
Untitled, Toba Kehdoori

Two point perspective

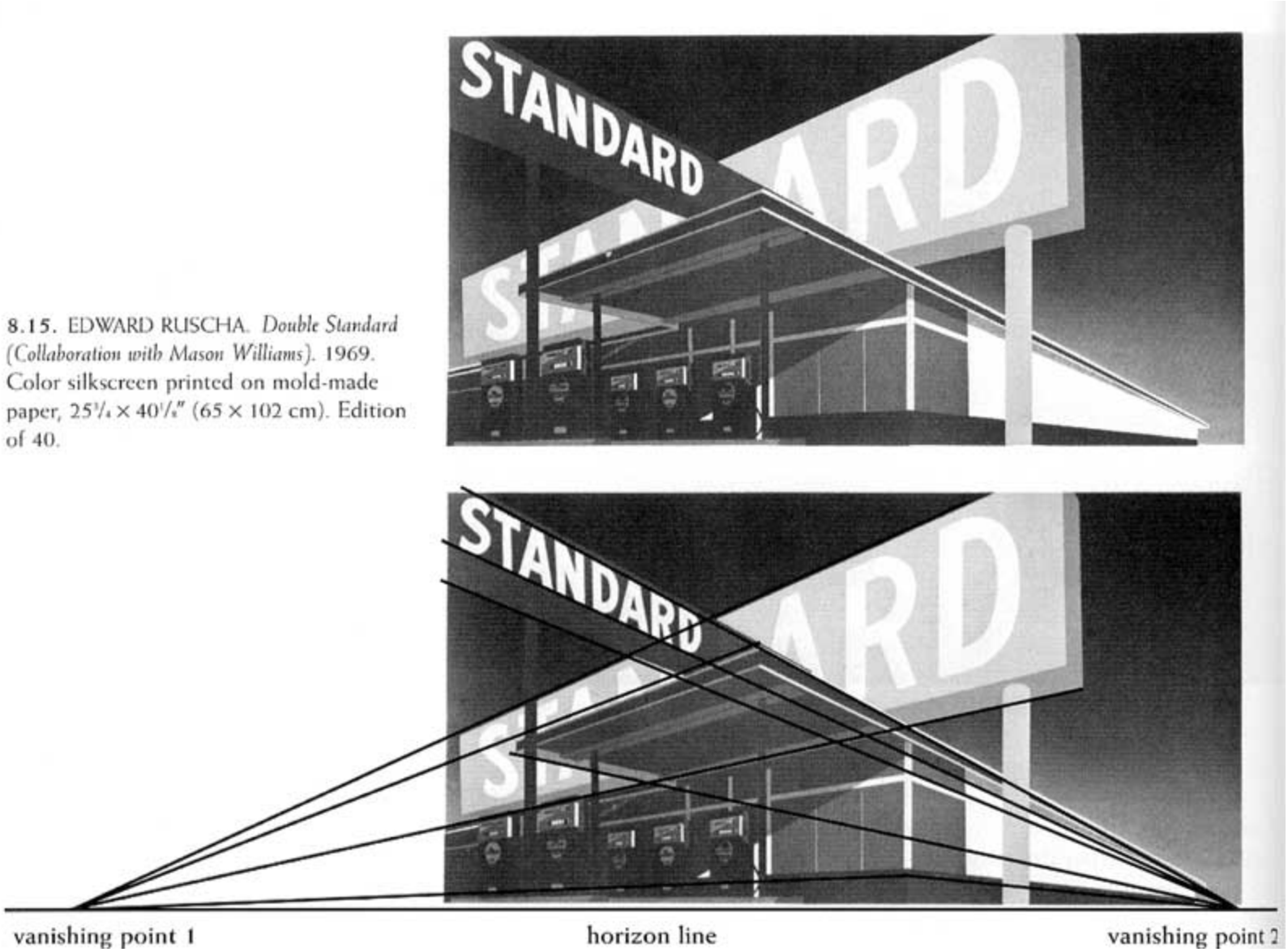


Two point interior perspective

office da, casa la roca

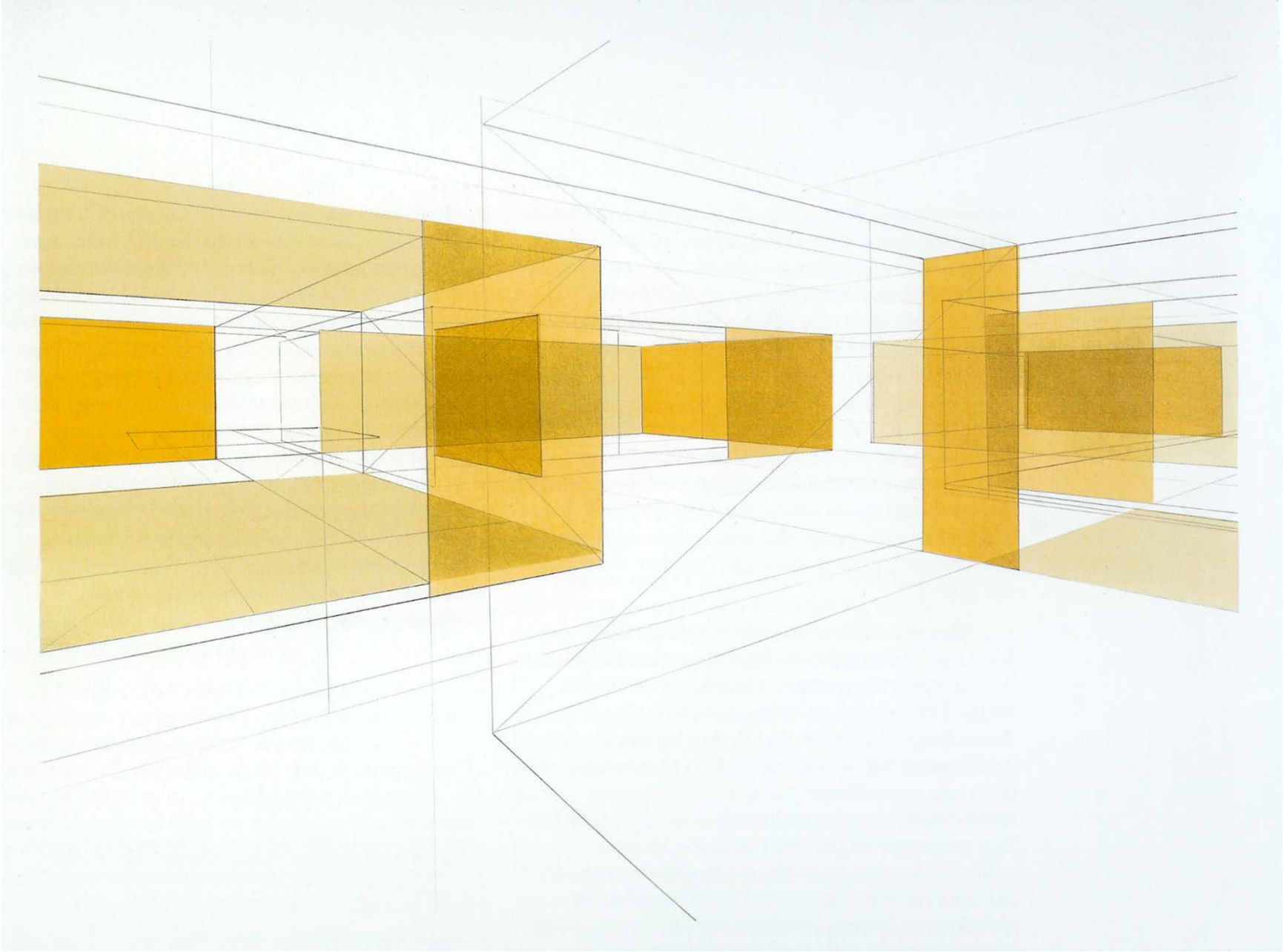


Unity temple, Frank Lloyd Wright

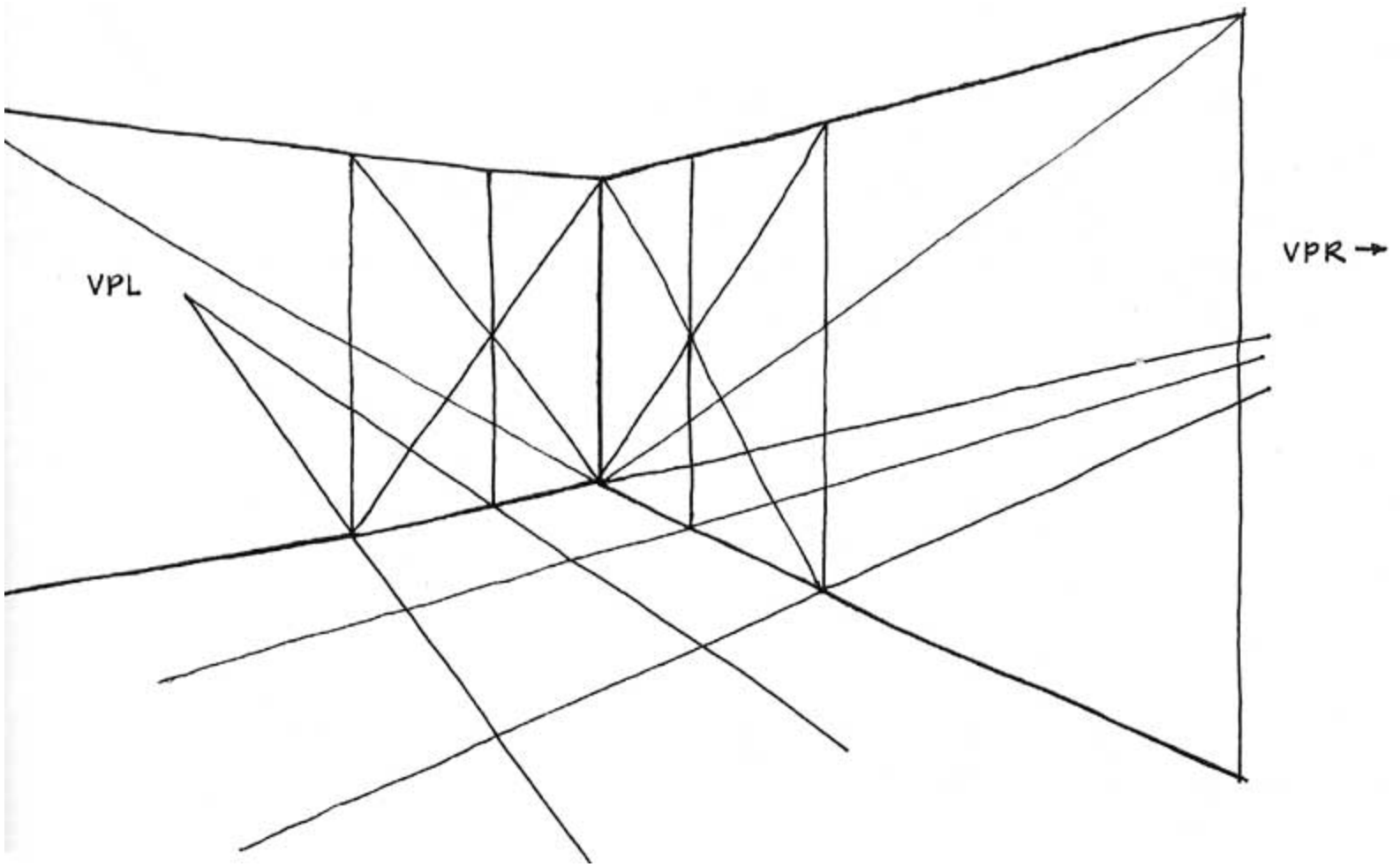


8.15. EDWARD RUSCHA. *Double Standard (Collaboration with Mason Williams)*. 1969. Color silkscreen printed on mold-made paper, 25¾ × 40⅛" (65 × 102 cm). Edition of 40.

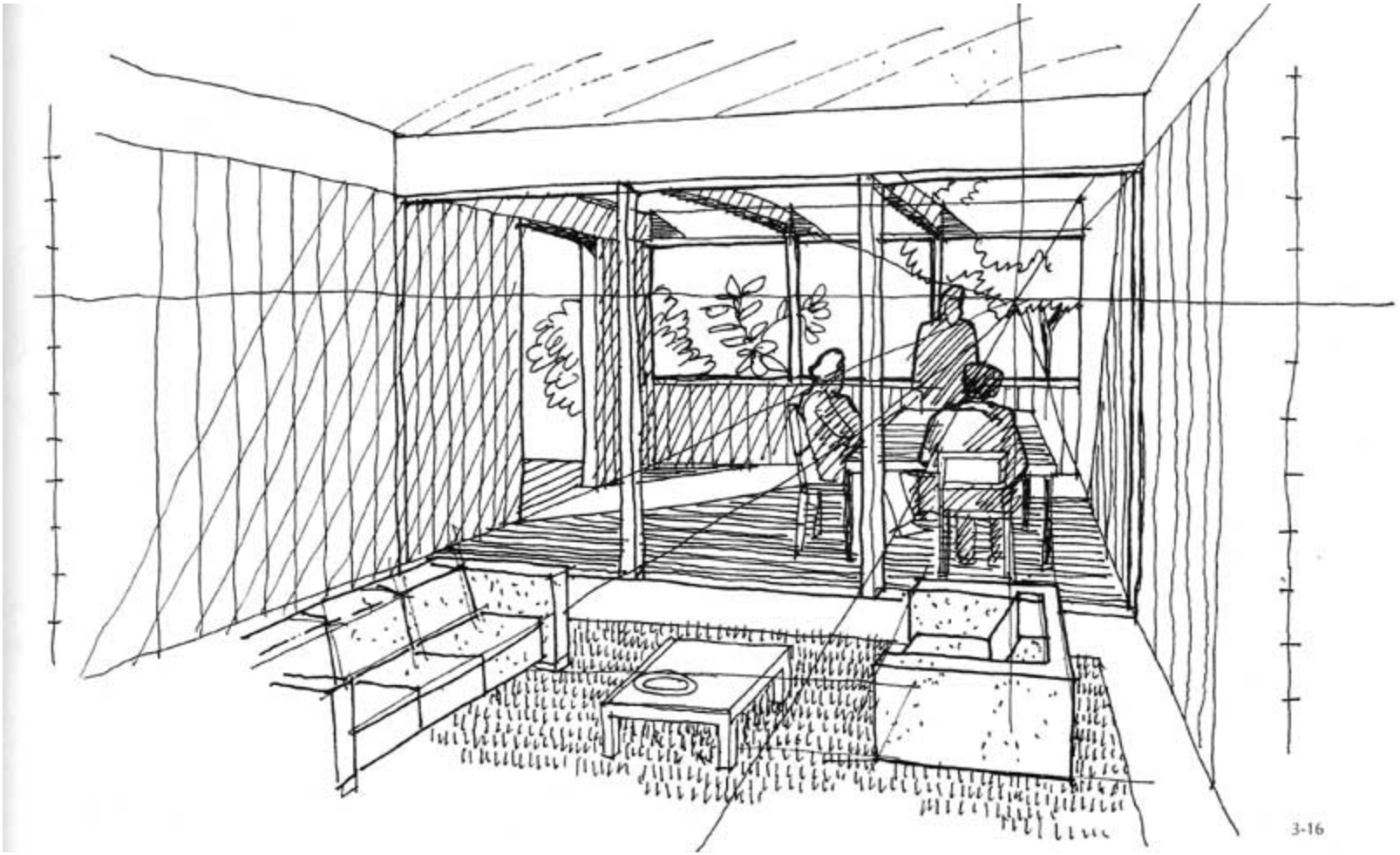
Double standard, Edward Ruscha



Ambiguity – transparency light model: northwest view (2), Kevin Appel



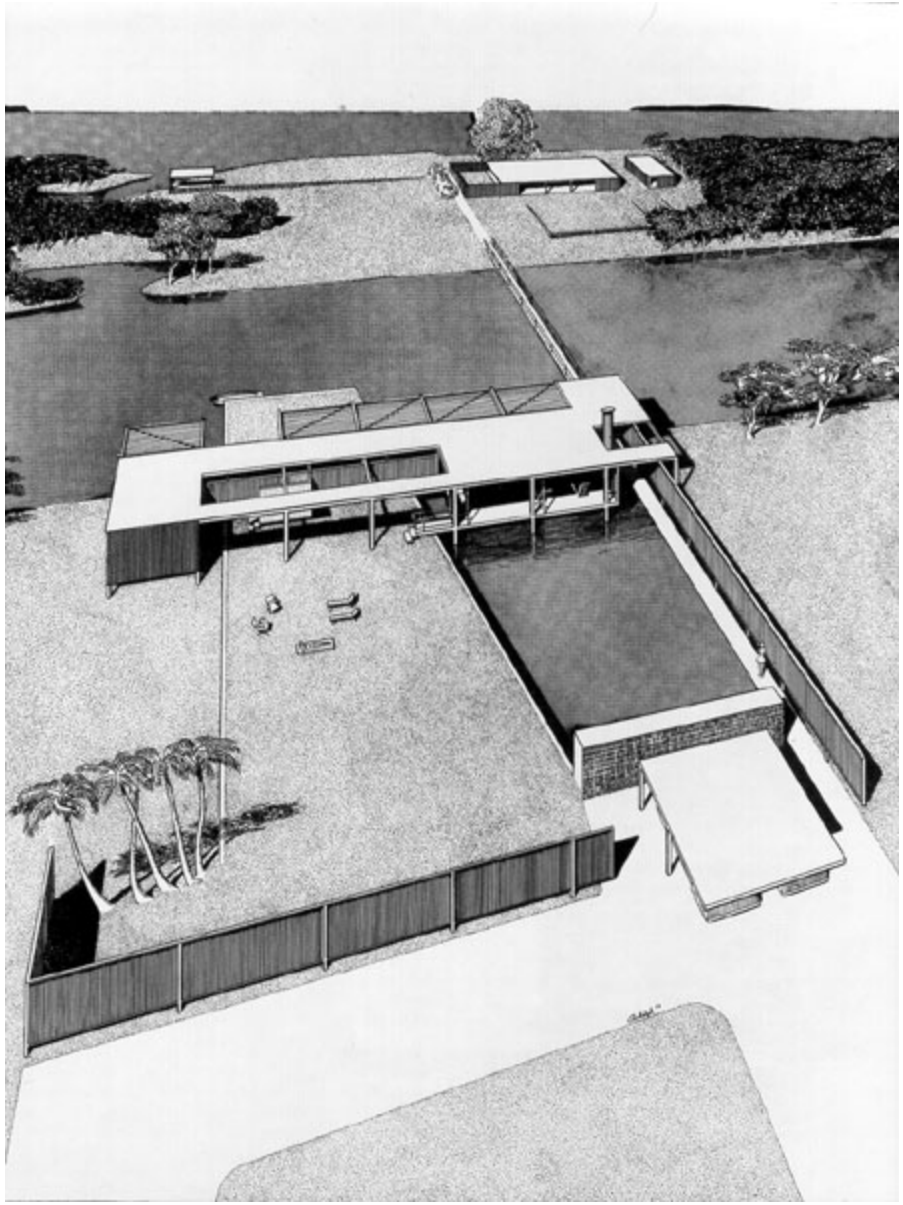
Two point interior perspective, Martha Sutherland



Two point perspective – Interior, Paul Laseau

Hague city hall project, office for metropolitan architecture (oma)

Wrapped Puerta de Alcala (Madrid), Christo



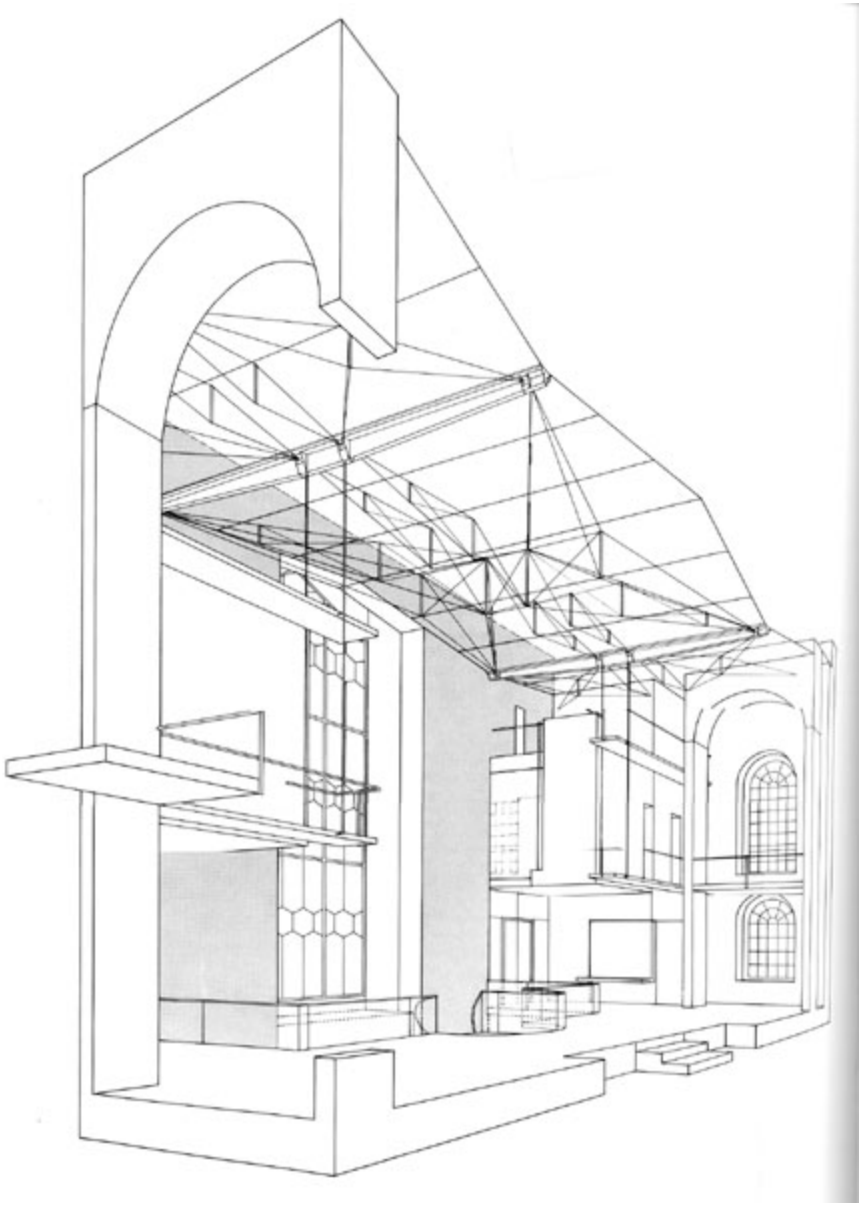
aerial perspective

paul rudolph, finney guest house

Other examples

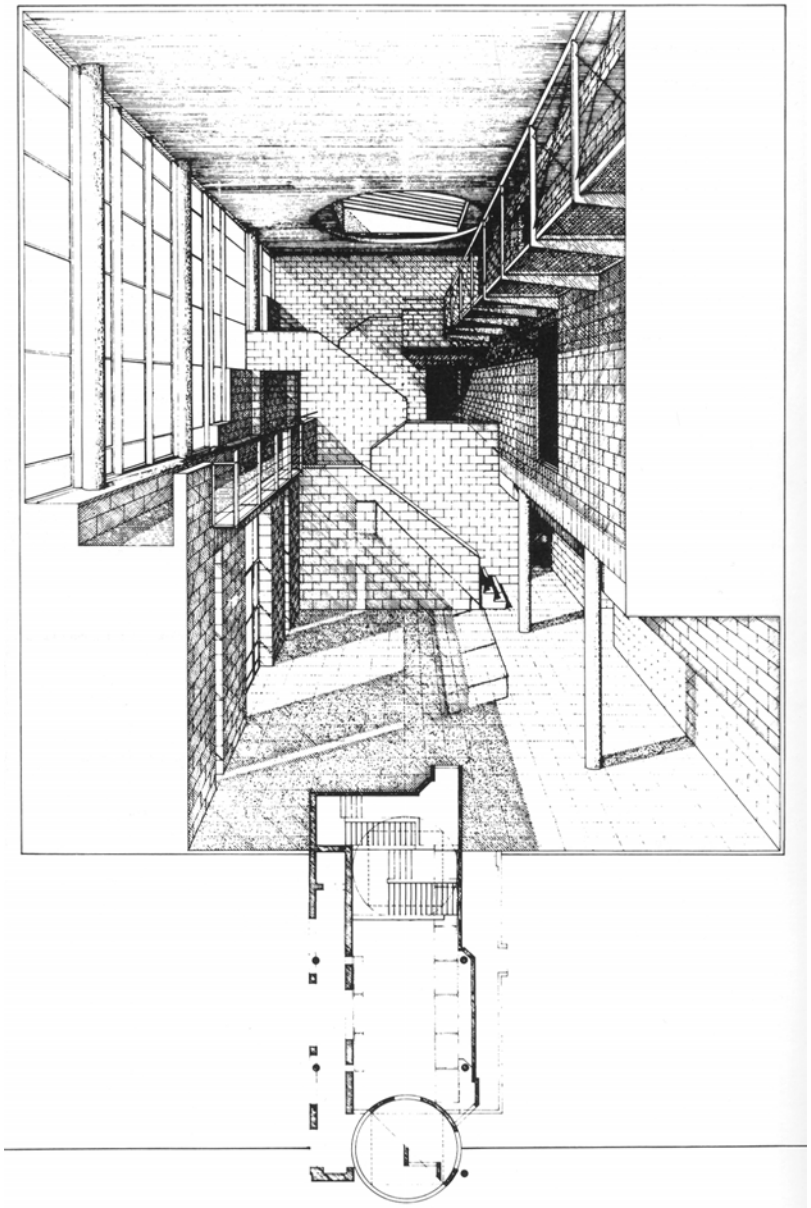
one-point section perspective

clark & menefee, reid house



other perspectives

stanton williams, st george in the east



other perspectives

rick mather architects, university of east anglia school of education

one-point section perspective

machado & silvetti, seaside commercial & residential building

let’s draw . . .

G1 IN CLASS

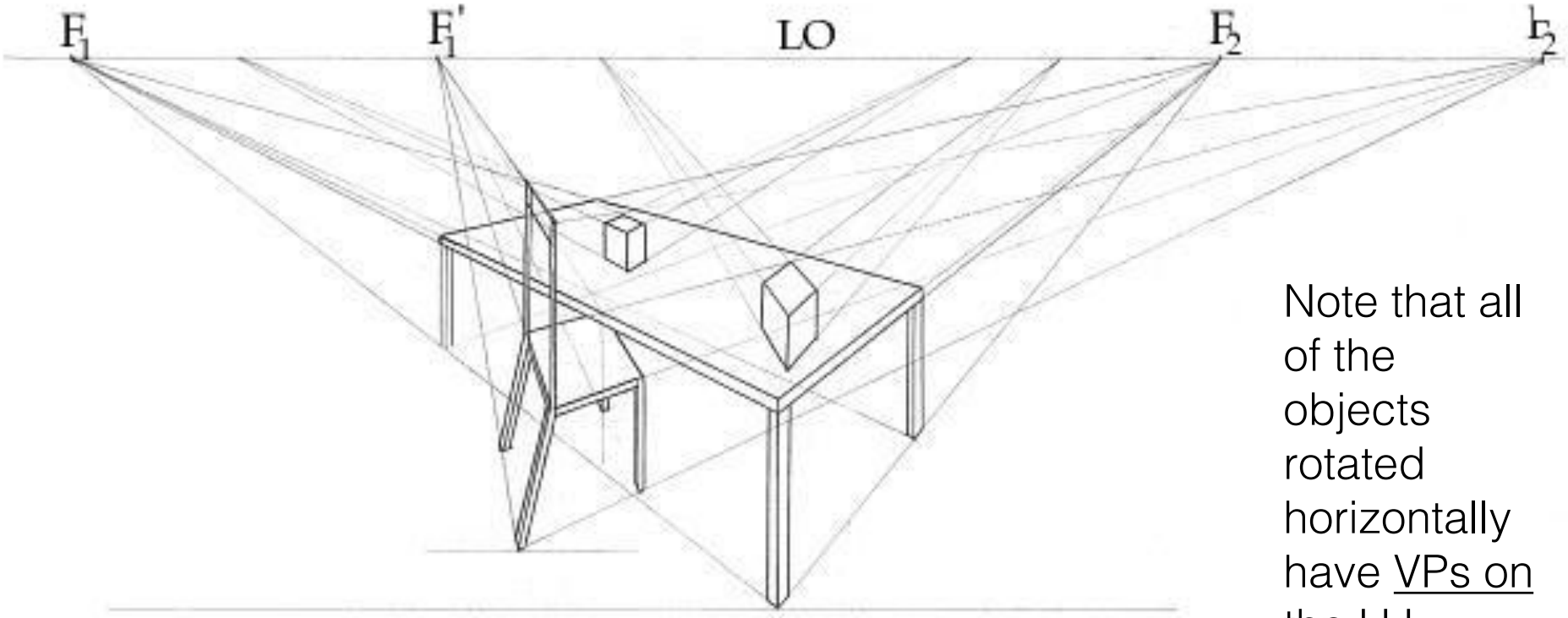
G:2

linear perspective I horizontal rotations & vertical slopes

G2 IN

rotations in 1 & 2 point perspective

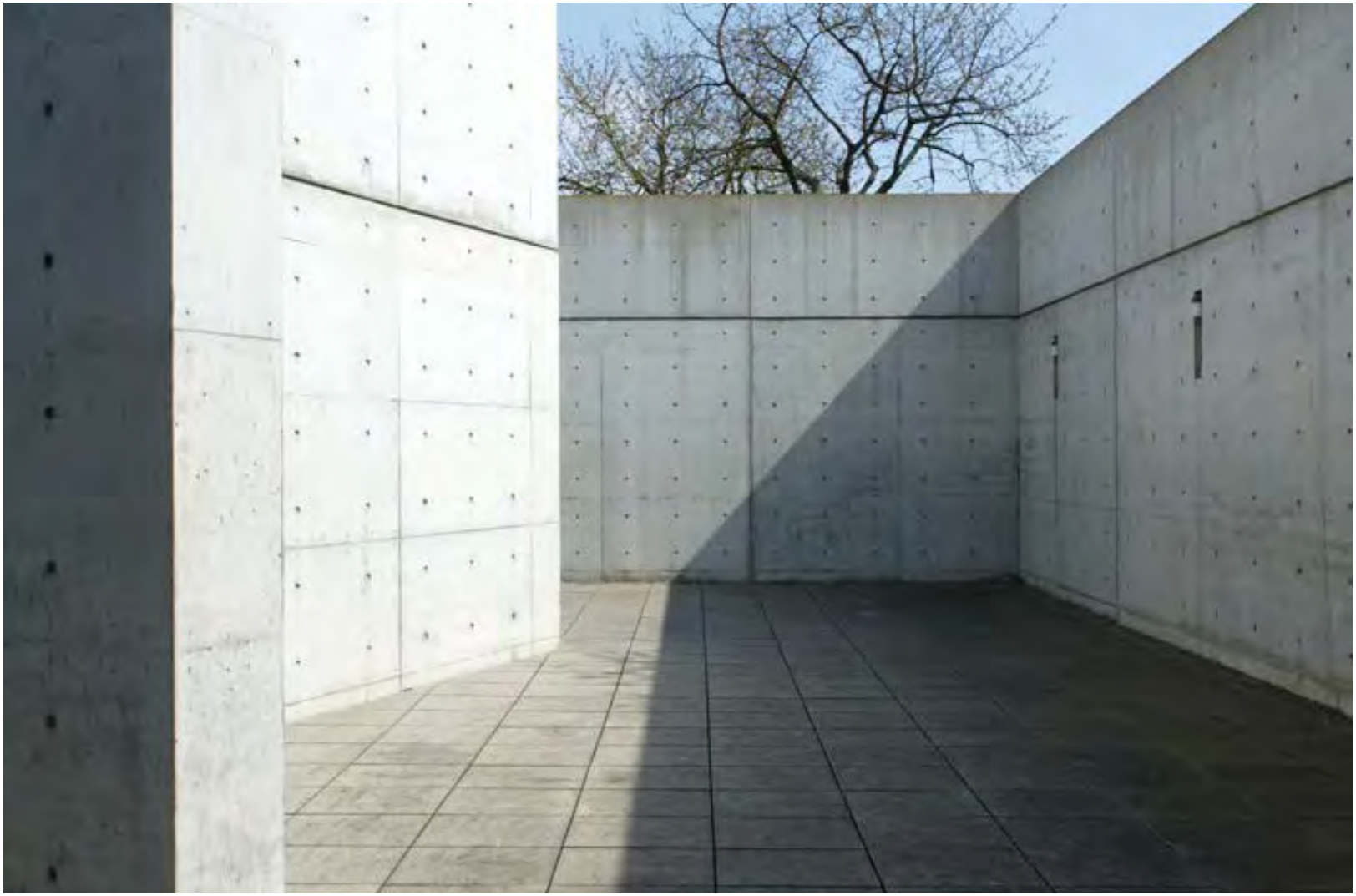
e.g. stairs, ramps, open doors, rotated walls, furnishings, etc.



Note that all of the objects rotated horizontally have VPs on the H.L.

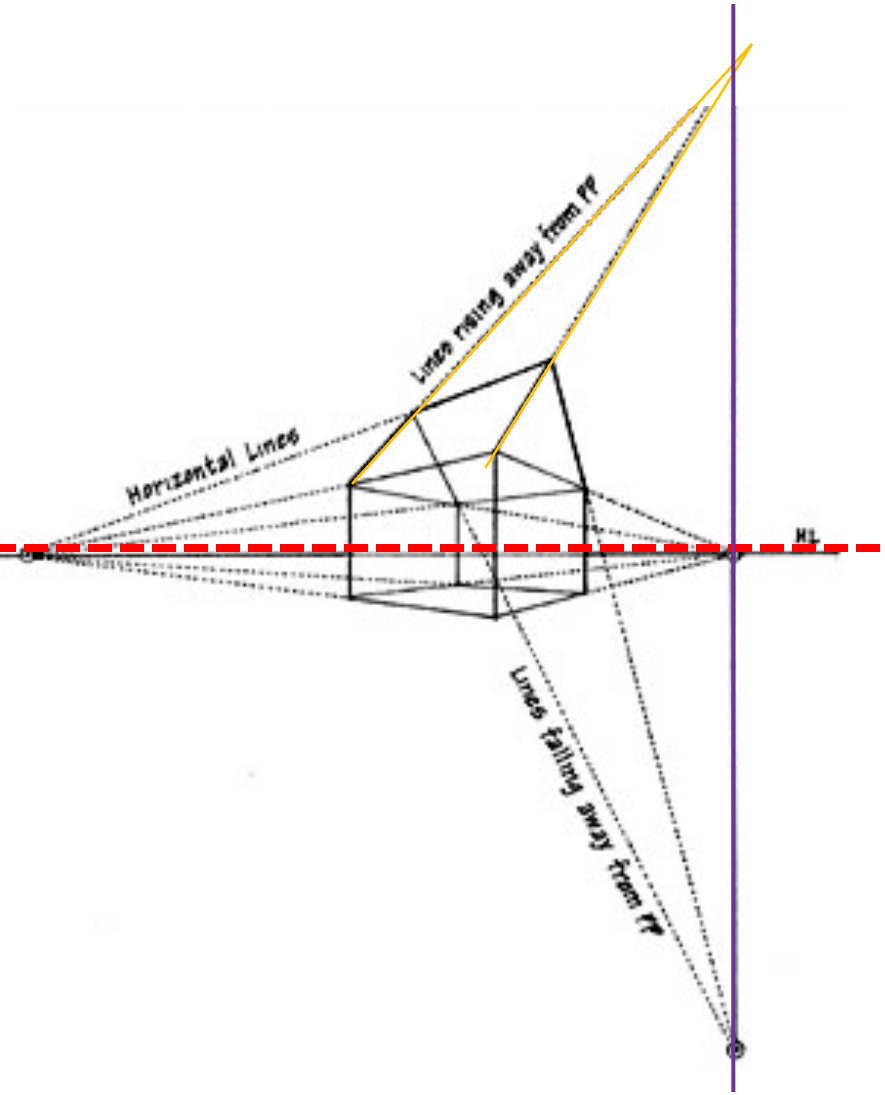
Perspective – convergence, Francis D.K. Ching

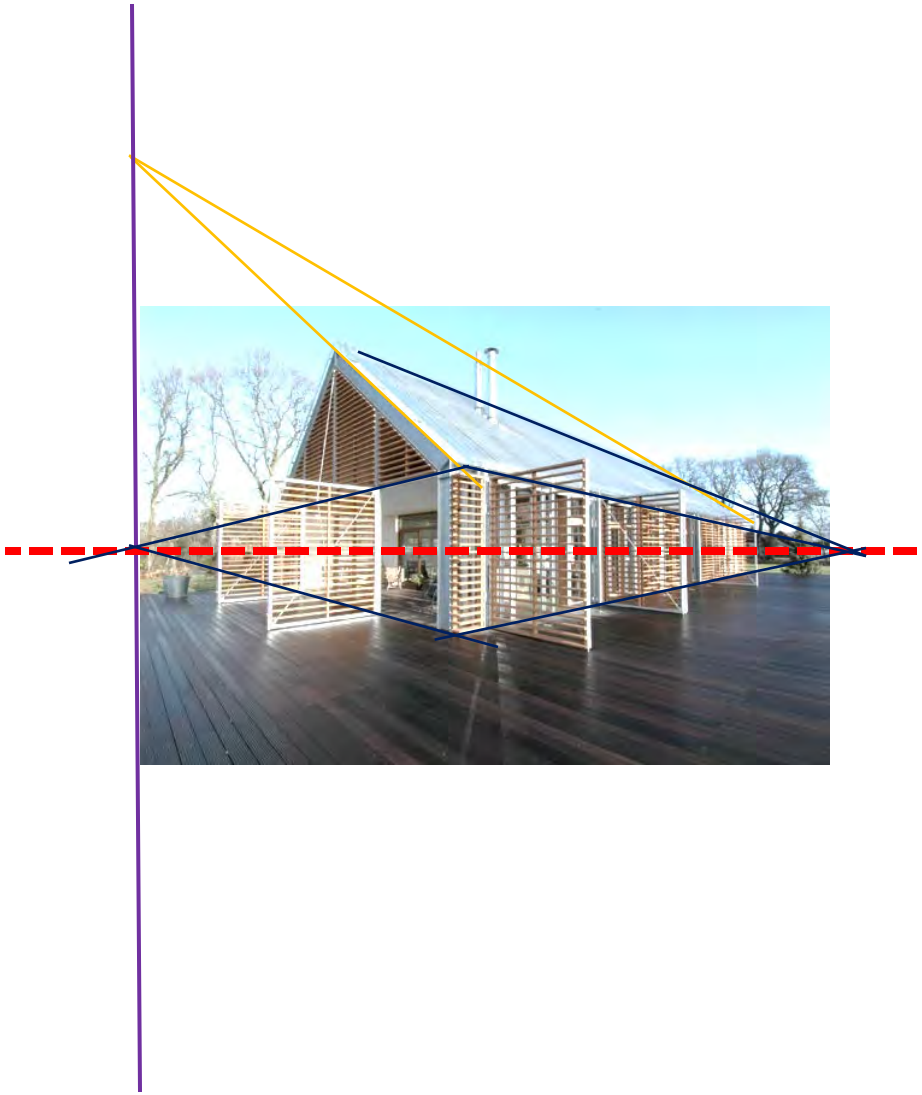
G:2 | IN

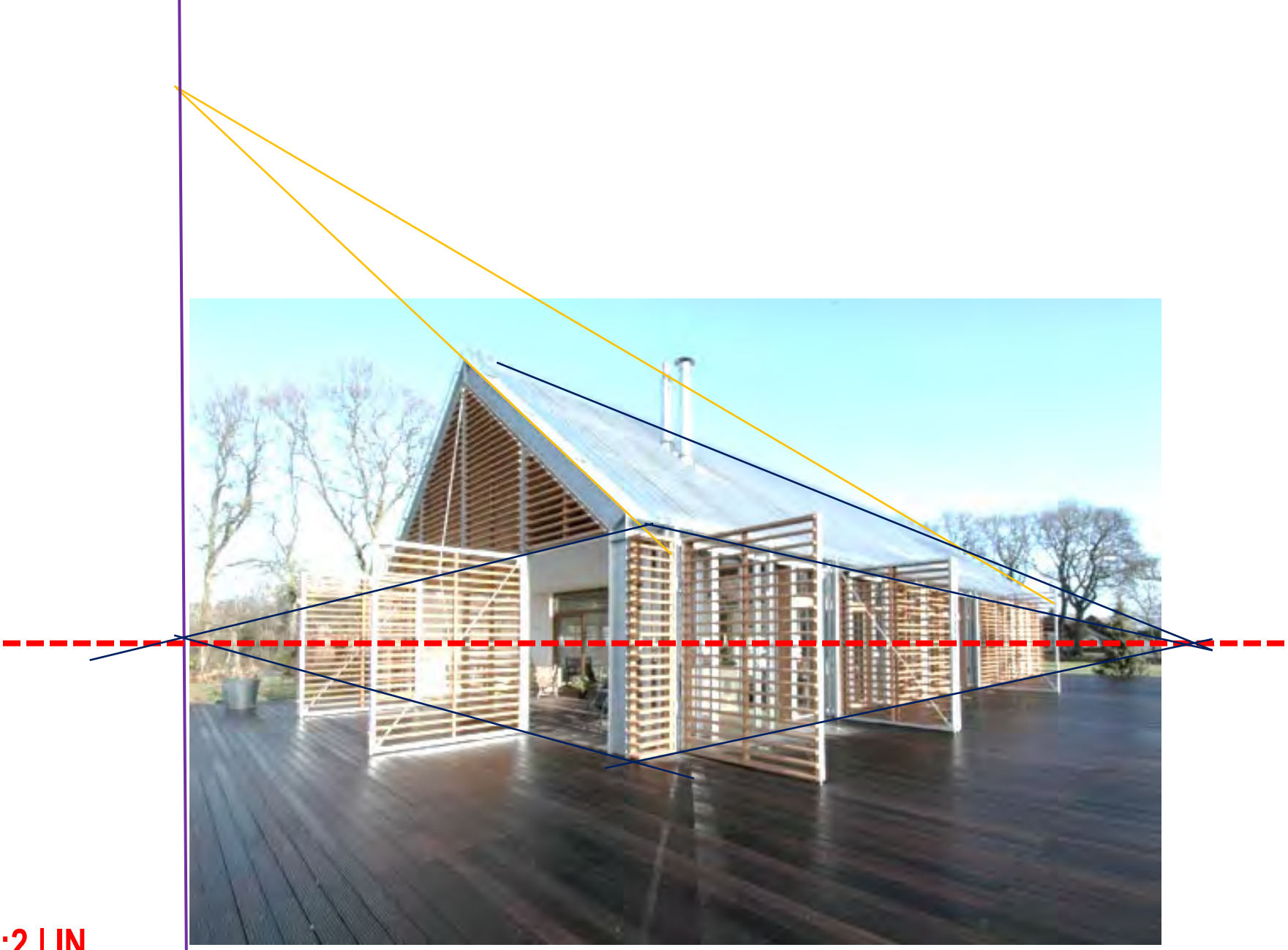


G:2 | IN

G:2 | IN

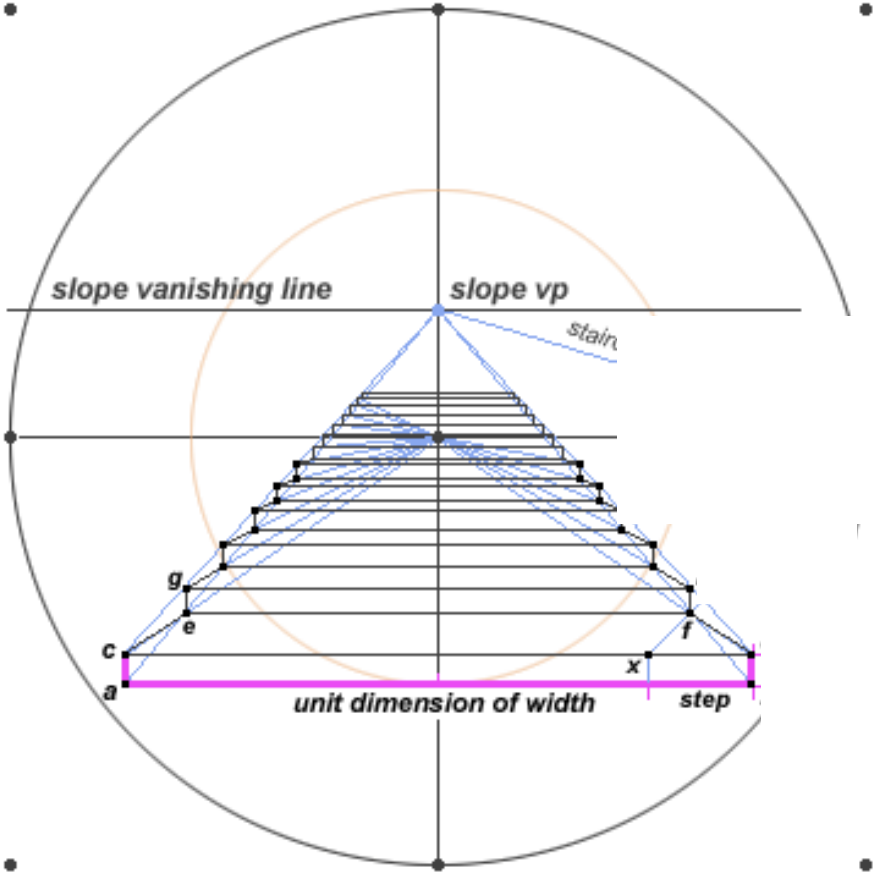

Lines rising away from PP
Horizontal Lines
HL
Lines falling away from PP

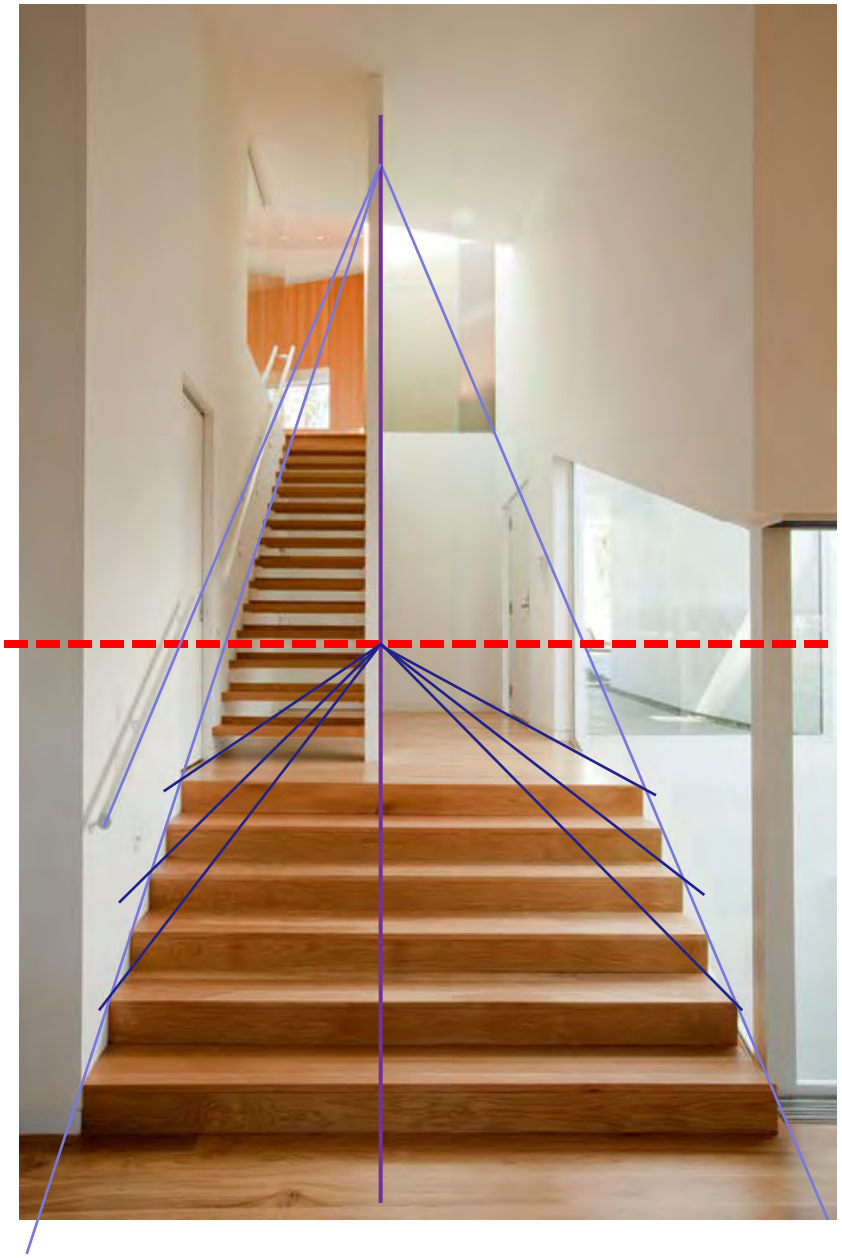




G:2 | IN

G:2 | IN

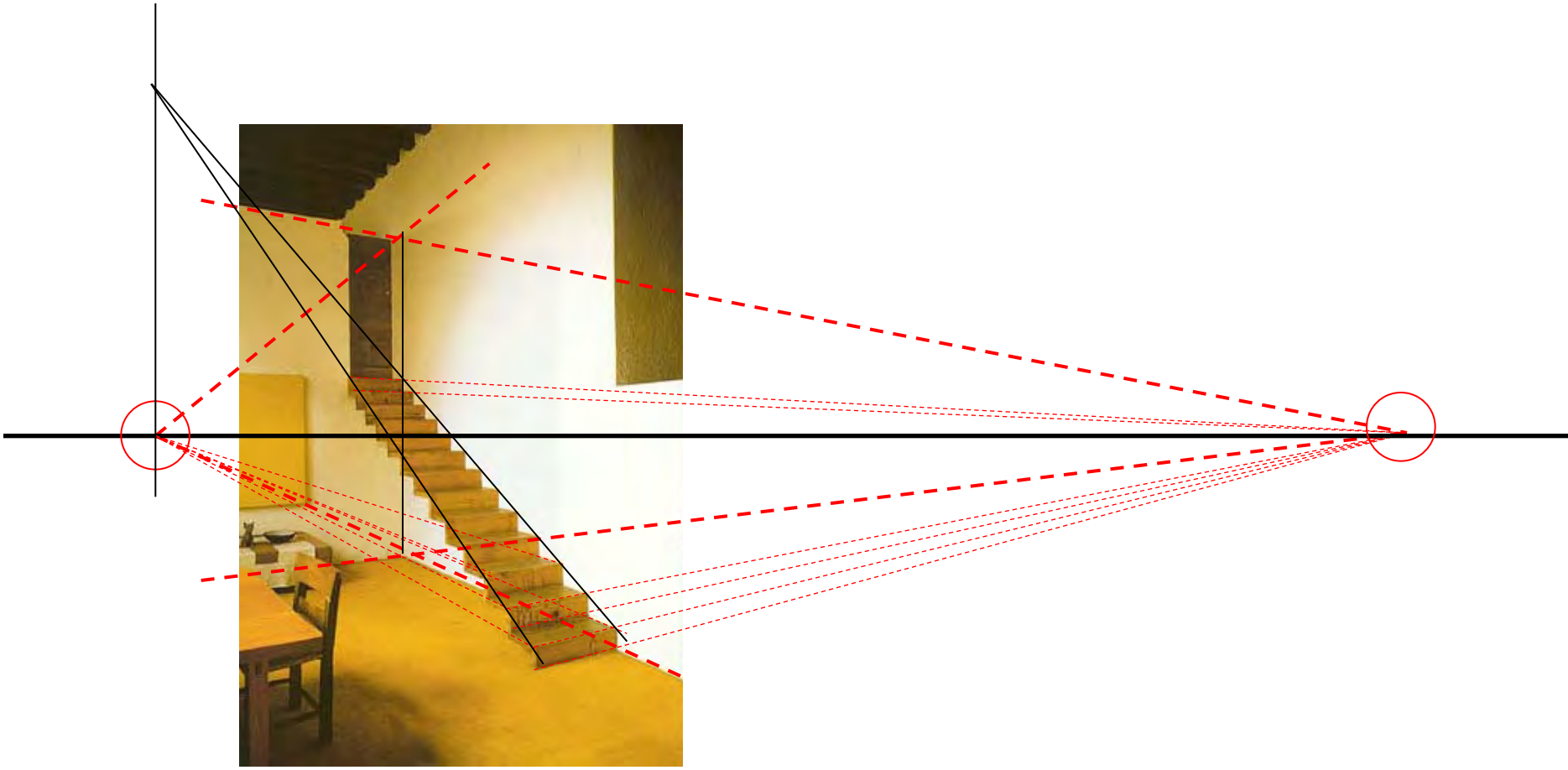




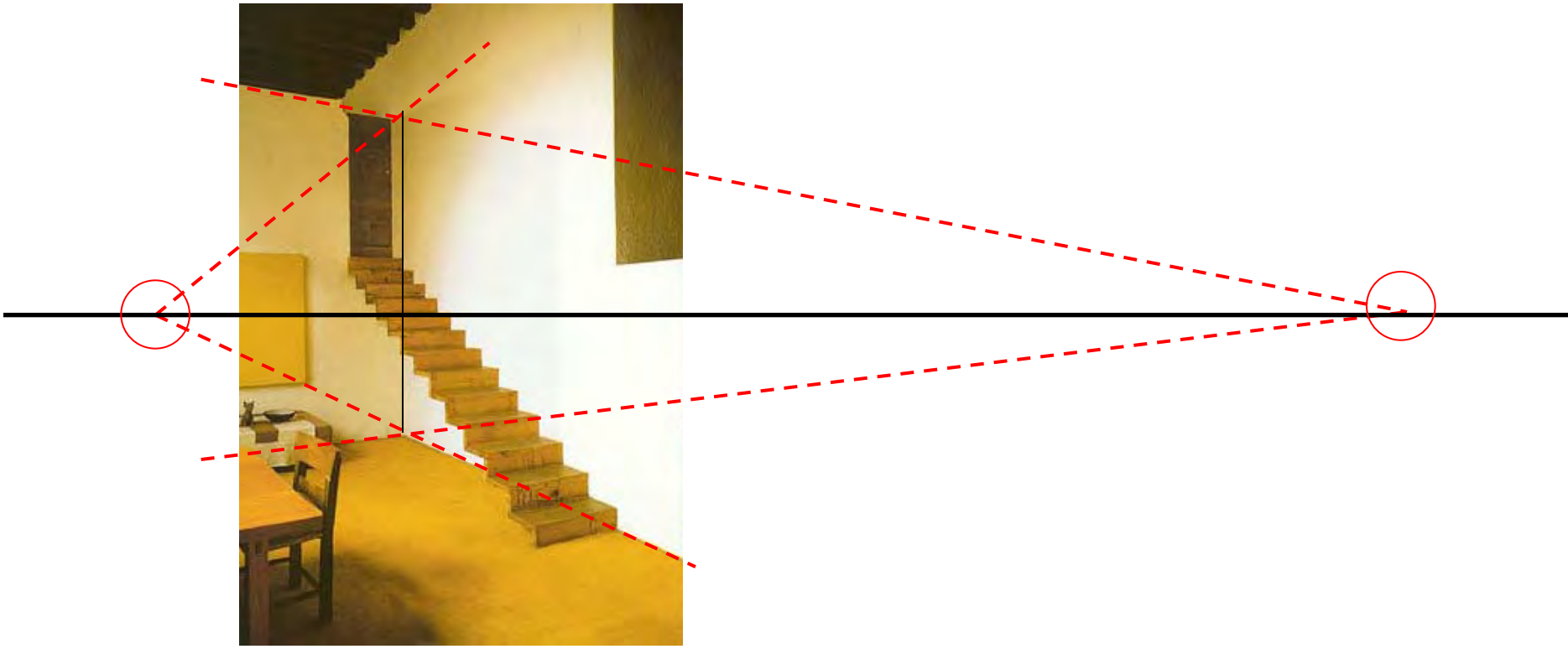
G:2 | IN

timber stairs
Predock Frane Architects

G:2 | IN



G:2 | IN



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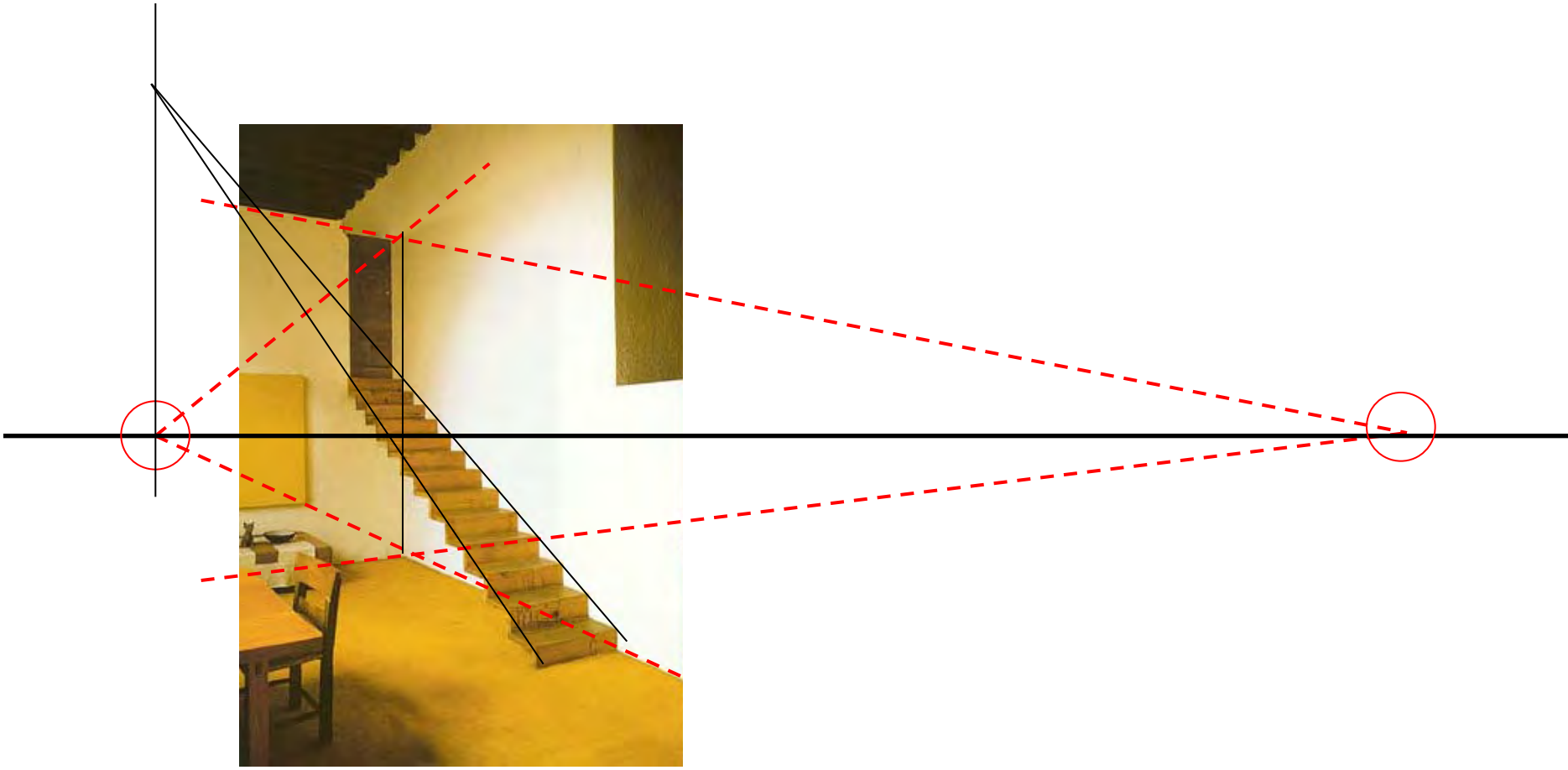

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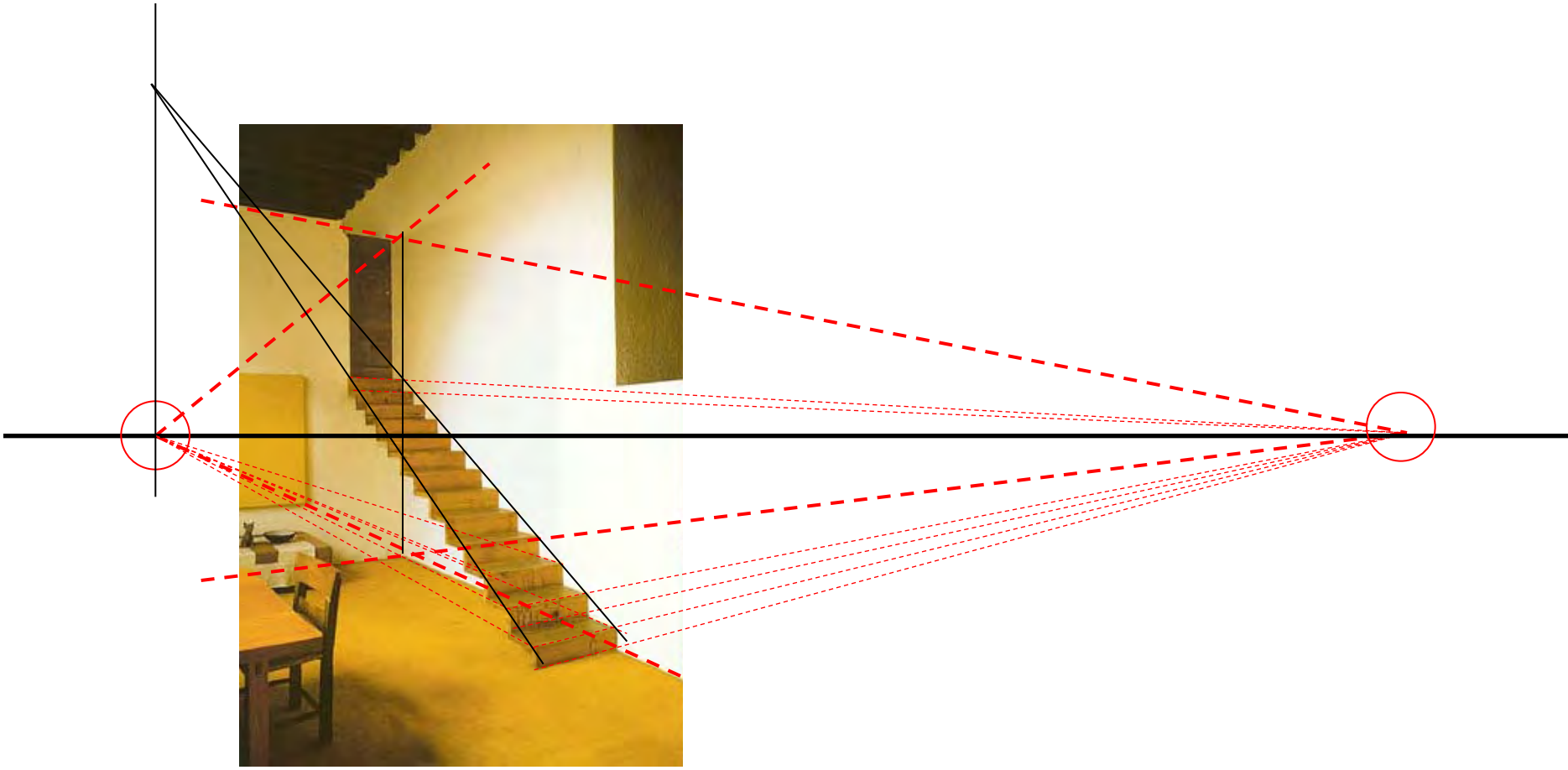
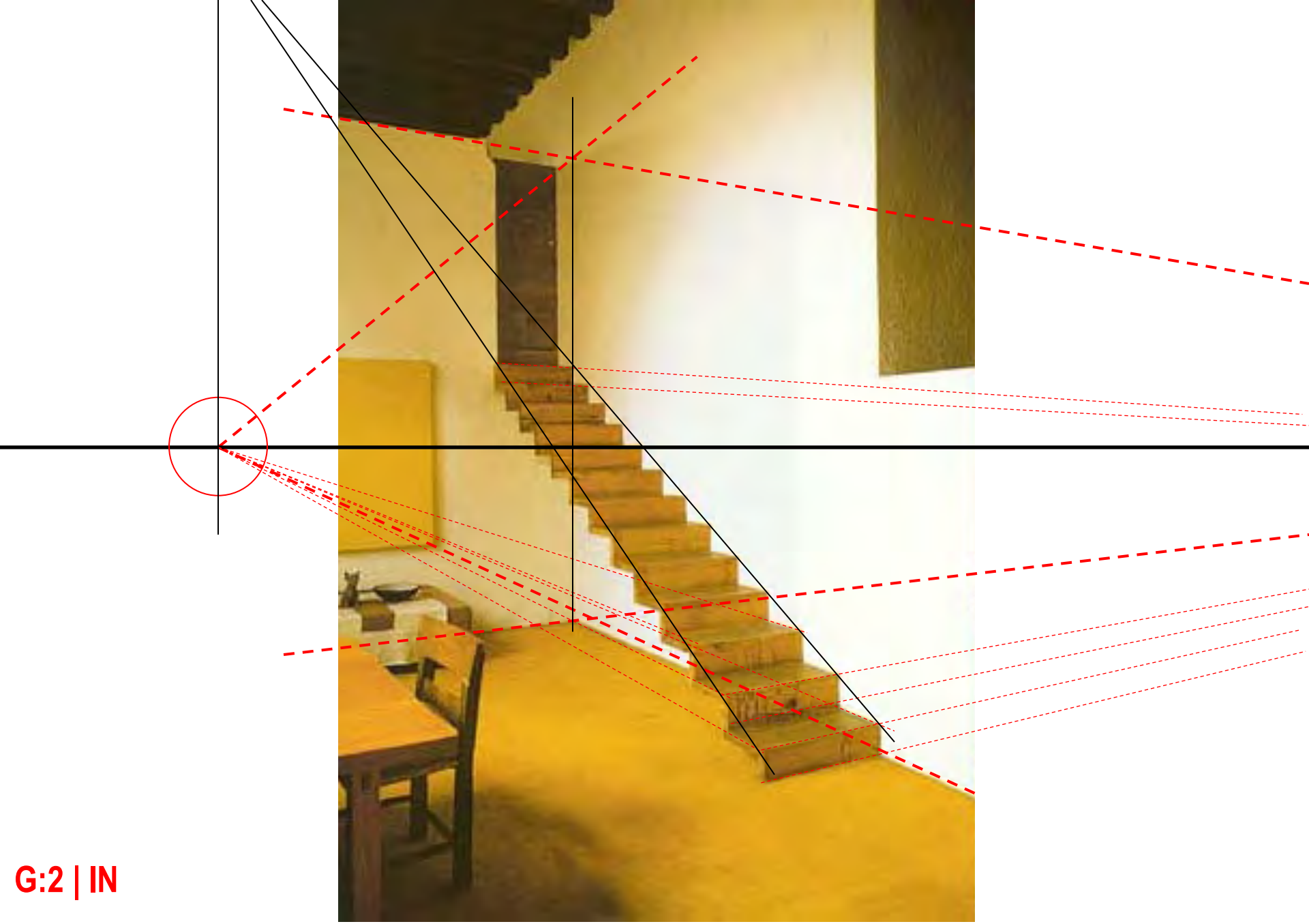


G:2 | IN



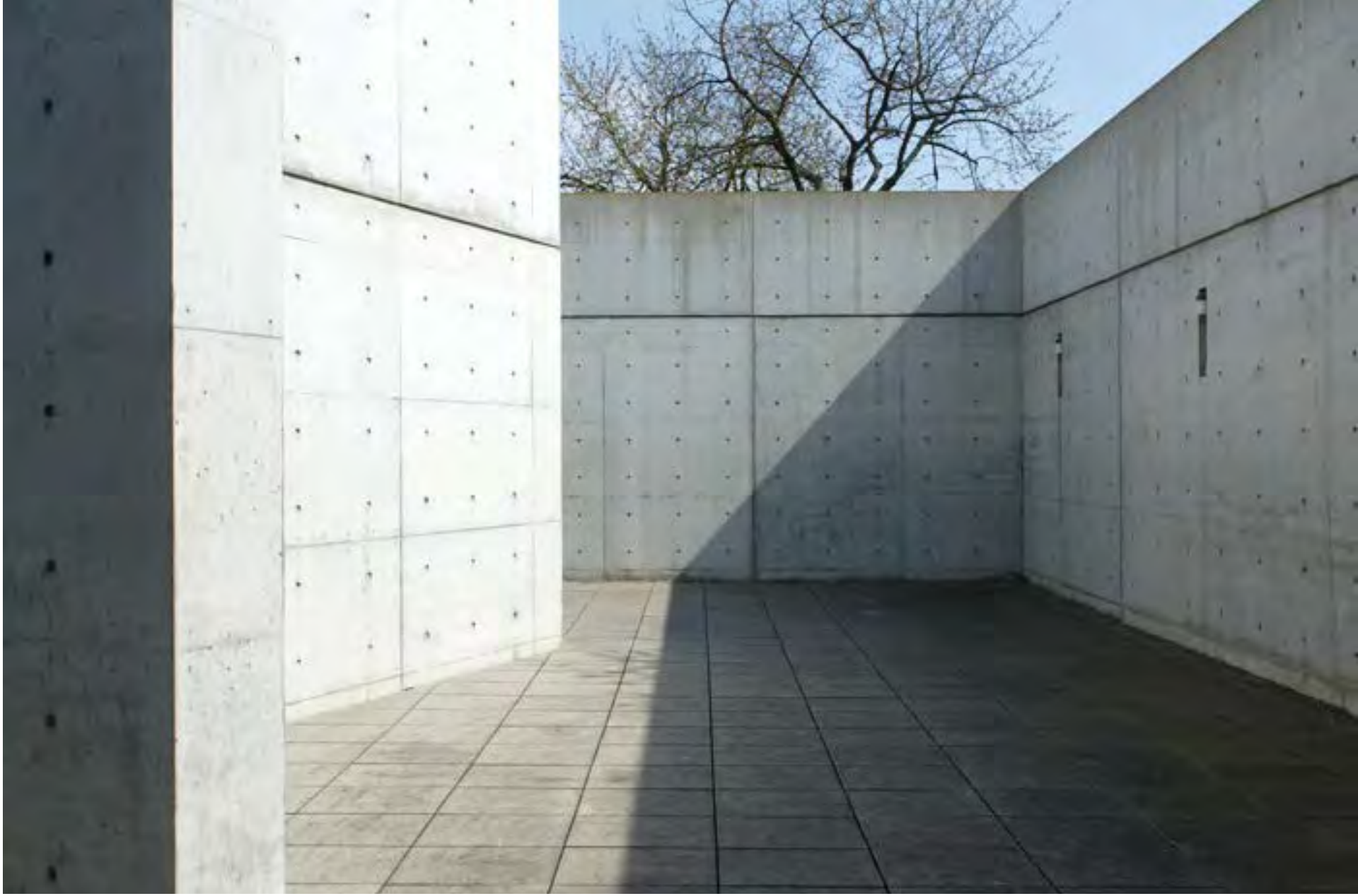
G:2 | IN

barragan house
tacubaya, mexico, 1947, luis barragan

G:2 | OUT

G:4

shadows I shading



G:4

http://www.minimalismic.com/popular/

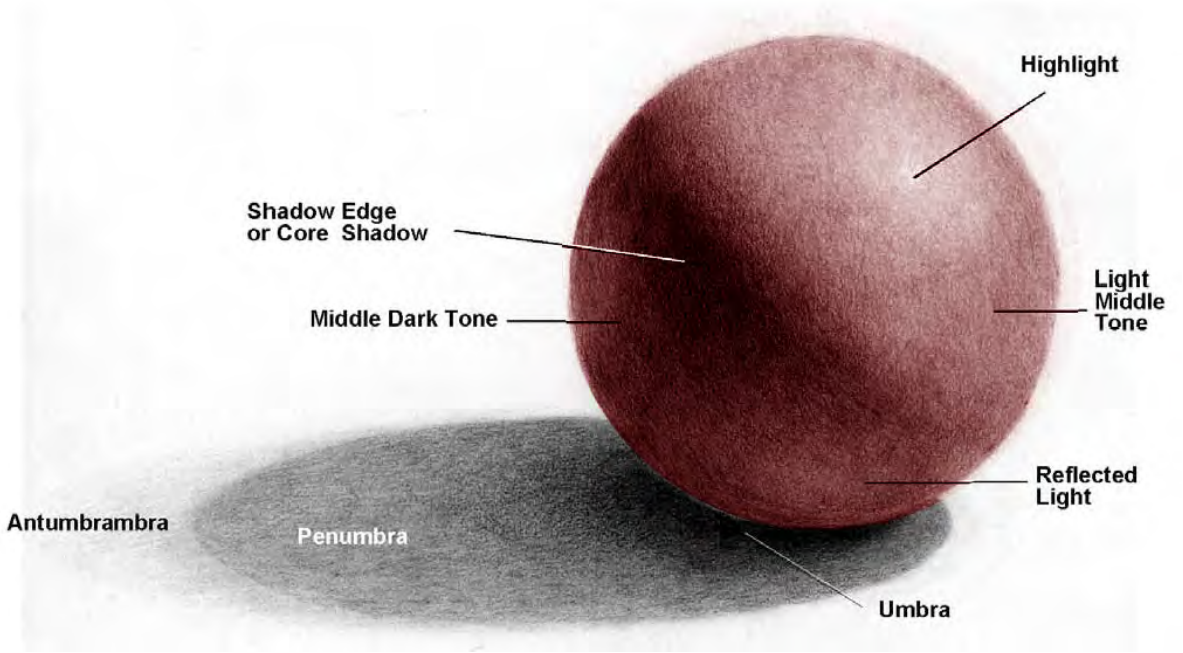
G:4

A View of the Aventine, Claude Lorrain, 1673
source: http://www.artistdaily.com/blogs/beginnersdrawing/archive/2008/07/07/drawing-logic-getting-depth-into-your-drawings.aspx

G:4

The Artist's Studio, Vermeer, 1667

source: http://www.artistdaily.com/blogs/beginnersdrawing/archive/2008/07/07/drawing-logic-getting-depth-into-your-drawings.aspx

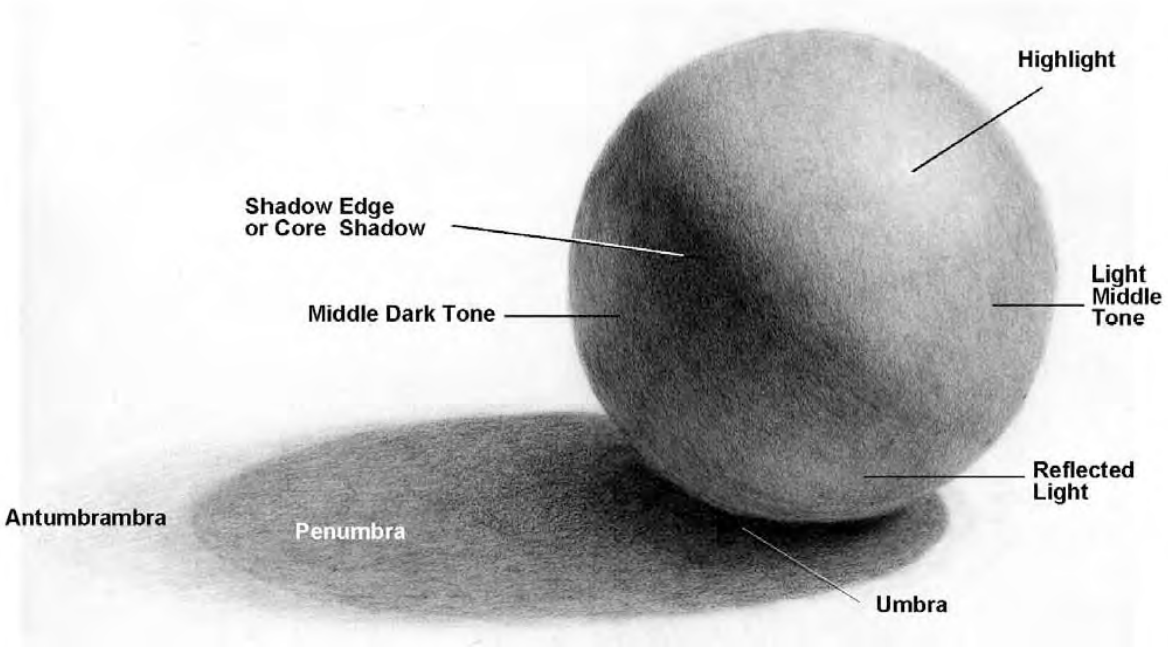


We refer to the relative lightness (in objects) or brightness (of light sources) of a color as value.

G:4

value and color(hue) – tint, tone, & shade

source: http://www.artinstructionblog.com/drawing-lesson-a-theory-of-light-and-shade/ (modified by R. Dulaney Jr.)

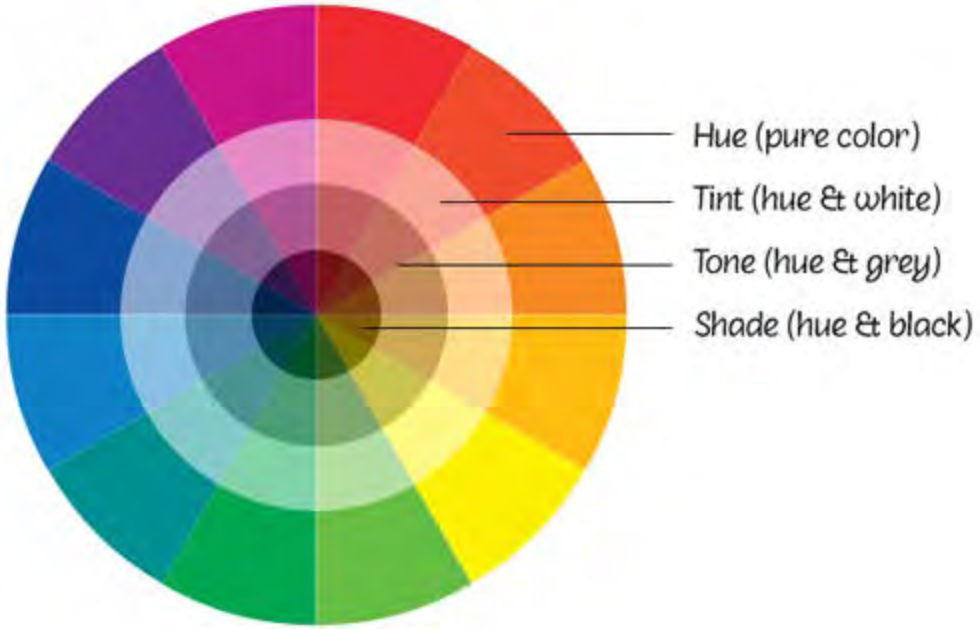


When we draw in grayscale (or"black and white"), we are removing the hue from tint, tone, and shade.

G:4

value

source: source: http://www.artinstructionblog.com/drawing-lesson-a-theory-of-light-and-shade/

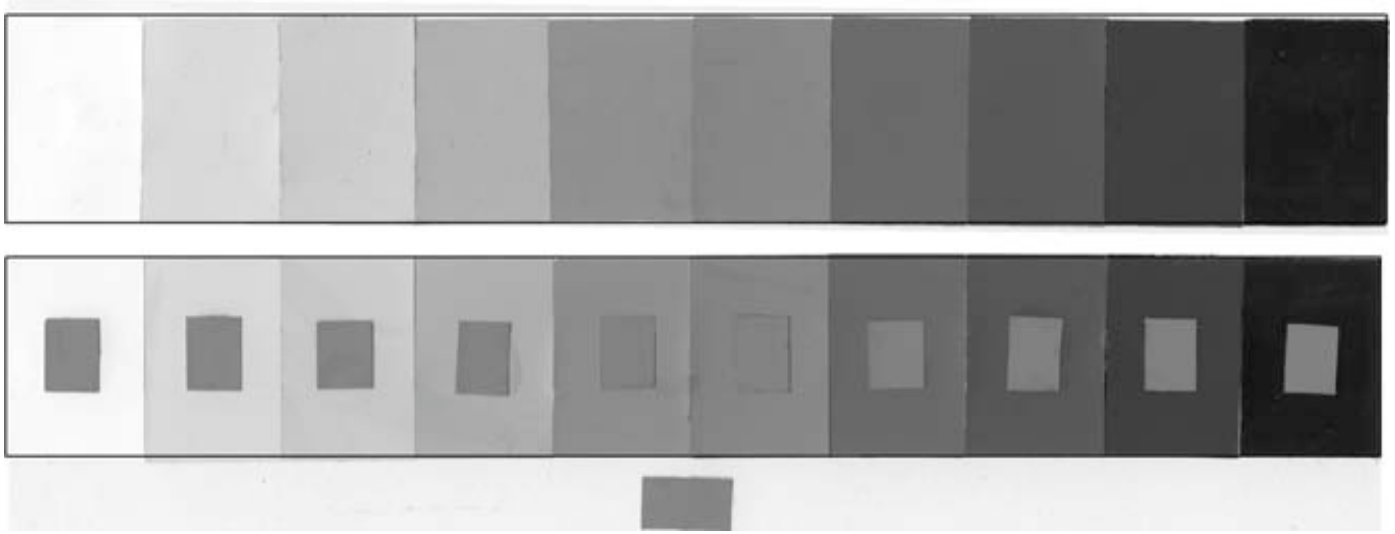


We refer to the relative lightness (in objects) or brightness (of light sources) of a color as value

G:4

value and color(hue) – tint, tone, & shade

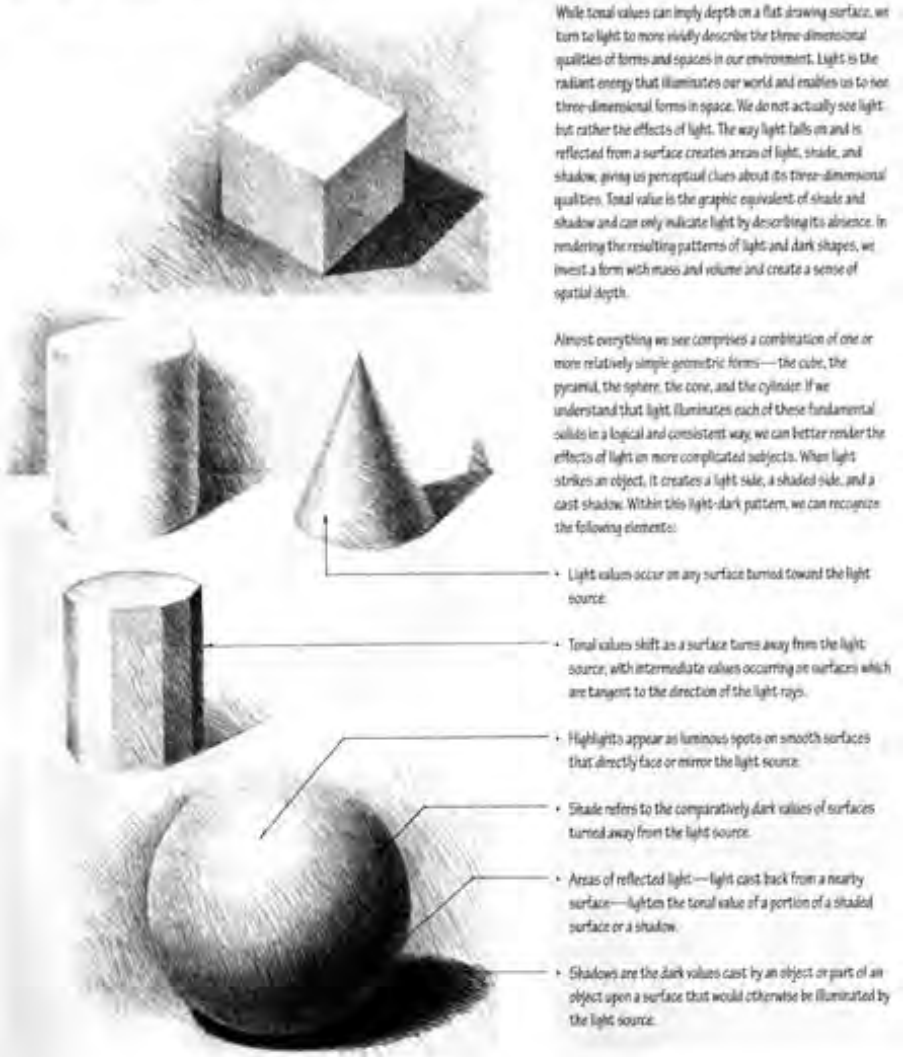
source: http://christinafowler.com/blog/free-color-wheel-download/



G:4

value scale
source: http://www.artinstructionblog.com/drawing-lesson-a-theory-of-light-and-shade/

CONVEYING LIGHT



While tonal values can imply depth on a flat drawing surface, we turn to light to more vividly describe the three-dimensional qualities of forms and spaces in our environment. Light is the radiant energy that illuminates our world and enables us to see three-dimensional forms in space. We do not actually see light but rather the effects of light. The way light falls on and is reflected from a surface creates areas of light, shade, and shadow, giving us perceptual clues about its three-dimensional qualities. Tonal value is the graphic equivalent of shade and shadow and can only indicate light by describing its absence. In rendering the resulting patterns of light and dark shapes, we invest a form with mass and volume and create a sense of spatial depth.

Almost everything we see comprises a combination of one or more relatively simple geometric forms—the cube, the pyramid, the sphere, the cone, and the cylinder. If we understand that light illuminates each of these fundamental solids in a logical and consistent way, we can better render the effects of light on more complicated subjects. When light strikes an object, it creates a light side, a shaded side, and a cast shadow. Within this light-dark pattern, we can recognize the following elements:

- Light values occur on any surface turned toward the light source.
- Tonal values shift as a surface turns away from the light source, with intermediate values occurring on surfaces which are tangent to the direction of the light rays.
- Highlights appear as luminous spots on smooth surfaces that directly face or mirror the light source.
- Shade refers to the comparatively dark values of surfaces turned away from the light source.
- Areas of reflected light—light cast back from a nearby surface—lighten the tonal value of a portion of a shaded surface or a shadow.
- Shadows are the dark values cast by an object or part of an object upon a surface that would otherwise be illuminated by the light source.

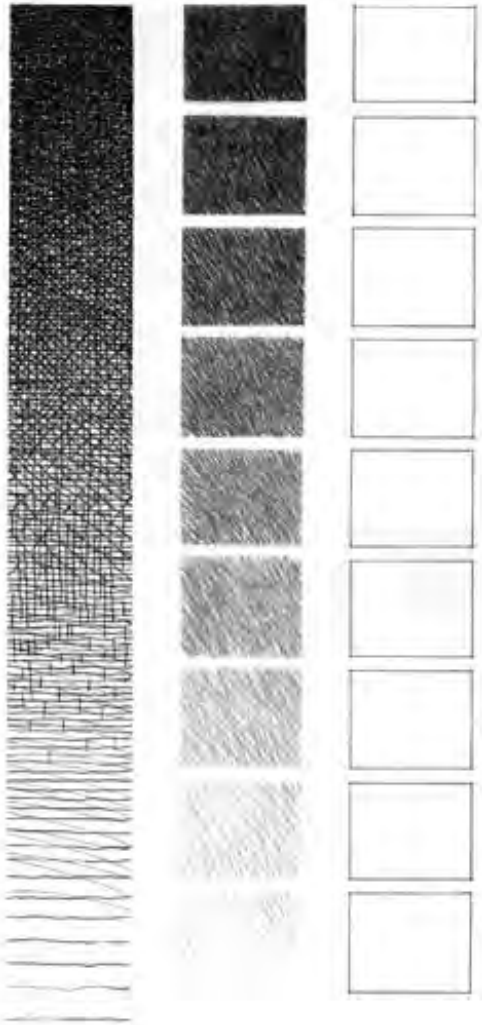
G:4

source: Ching, *Design Drawing*

White represents the lightest possible value and black the darkest. In between exists an intermediate range of grays. A familiar form of this range is represented by a value or gray scale having ten equal gradations from white to black.

As we begin to see value relationships, we must develop the ability to create corresponding tones using a variety of media and techniques. To this end, producing both a stepped series and a graduated scale of tonal values is beneficial and rewarding. Explore all of the shading techniques described on the preceding pages. Also investigate the possibility of executing a gray scale on a tinted or colored surface, using a black pencil to define values darker than the tone of the surface and a white pencil to establish the lighter values.

After each attempt, carefully evaluate the tonal order from a distance. Check to see if there are any breaks in value and if an even progression of values exists from white to black. With disciplined practice, we should be able to develop the control necessary to replicate any desired tone and maintain the required value contrasts in a drawing.



G:4

source: Ching, *Design Drawing*

let’s draw . . .

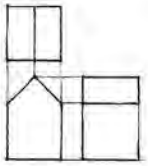
G:7

orthographic views

When we study how each projection system represents the same subject, we can see how different pictorial effects result. We categorize these pictorial systems into multiview drawings, paraline drawings, and perspective drawings.

Projection Systems

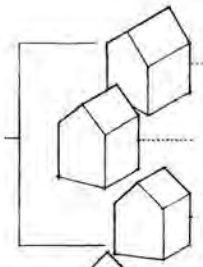
Orthographic Projection



Pictorial Systems

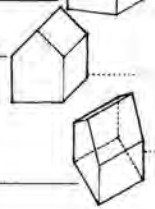
Multiview Drawings
- Plans, sections, and elevations.
- The principal face in each view is oriented parallel to the picture plane.

Axonometric Projection



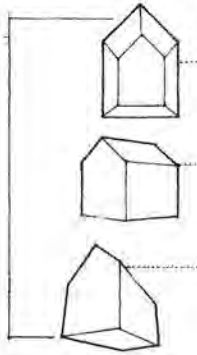
Paraline Drawings
- Isometrics: The three major axes make equal angles with the picture plane.
- Dimetrics: Two of the three major axes make equal angles with the picture plane.
- Trimetrics: The three major axes make different angles with the picture plane.

Oblique Projection



- Elevation obliques: A principal vertical face is oriented parallel to the picture plane.
- Plan obliques: A principal horizontal face is oriented parallel to the picture plane.

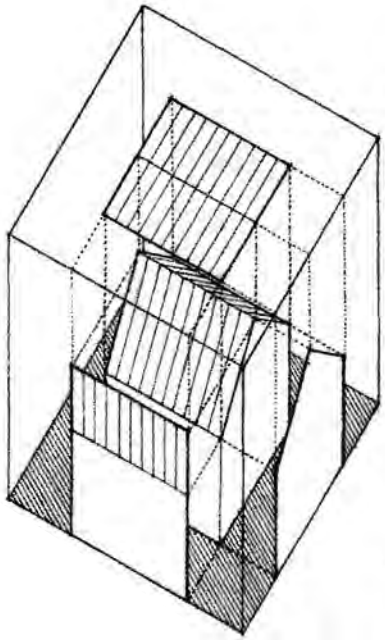
Perspective Projection



Perspective Drawings
- 1-point perspectives: One horizontal axis is perpendicular to the picture plane, the other horizontal axis and the vertical axis are parallel with the picture plane.
- 2-point perspectives: Both horizontal axes are oblique to the picture plane, and the vertical axis remains parallel with the picture plane.
- 3-point perspectives: Both horizontal axes as well as the vertical axis are oblique to the picture plane.

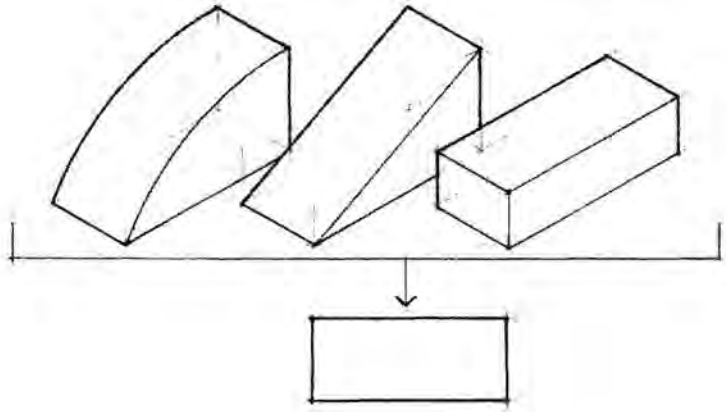
These pictorial views are available in most 3D CAD and modeling programs. The terminology, however, may differ from what is presented here.

pictorial systems

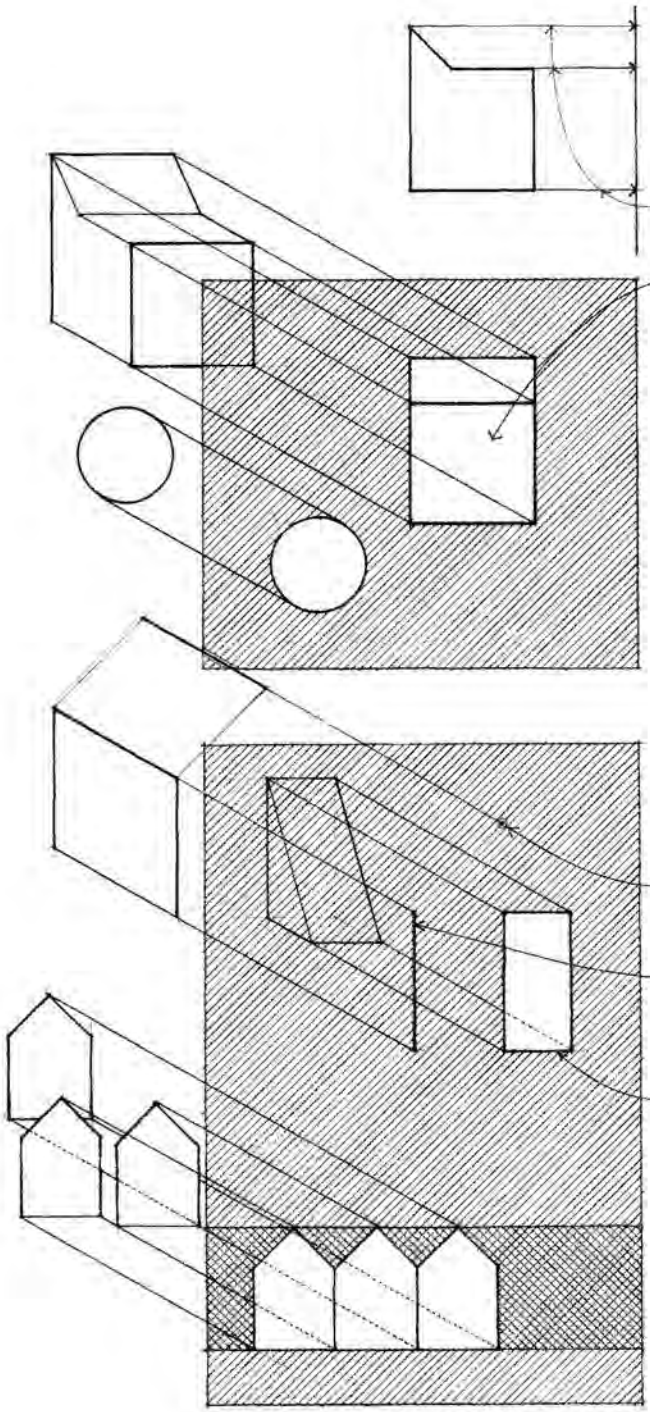


- If we enclose an object within a transparent picture-plane box, we can name the images projected orthographically onto the principal picture planes.
- Top views are orthographic projections cast onto the horizontal picture plane. In architectural drawing, top views are called plans.
- Front and side views are orthographic projections cast onto the vertical picture planes. In architectural drawing, front and side views are called elevations.
- See Chapter 4 for floor plans and sections, which are orthographic projections of cuts made through a building.

- To make it easier to read and interpret how a series of orthographic projections describes a three-dimensional whole, we arrange the views in an orderly and logical fashion.
- The most common layout results when we unfold the transparent picture-plane box into a single plane represented by the drawing surface. The top or plan view revolves upward to a position directly above and vertically aligned with the front or elevation view, while the side view revolves to align horizontally with the front view. The result is a coherent set of related orthographic views.



- Although these three objects have different forms, their top views appear to be identical. Only by looking at related orthographic projections are we able to understand the three-dimensional form of each object. We should therefore study and represent three-dimensional forms and constructions through a series of related orthographic projections.
- The mind must be able to read and assemble a set of multiview drawings to fully understand the nature of the three-dimensional subject.



Orthographic Projection

Orthographic projection represents a three-dimensional form or construction by projecting lines perpendicular to the picture plane.

Projectors are both parallel to each other and perpendicular to the picture plane.

Major faces or facets of the subject are typically oriented parallel with the picture plane. Parallel projectors therefore represent these major faces in their true size, shape, and proportions. This is the greatest advantage of using orthographic projections—to be able to describe facets of a form parallel to the picture plane without foreshortening.

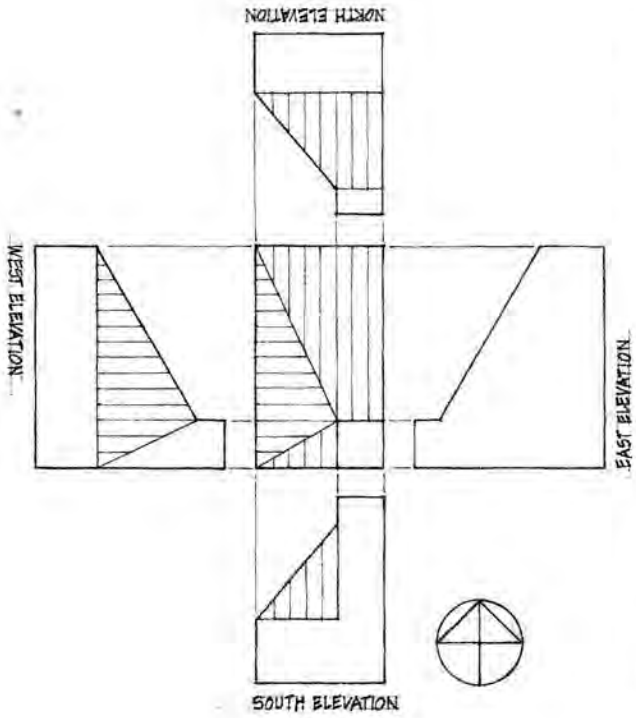
Ambiguity of depth is inherent in any orthographic projection, as the third dimension is flattened onto the picture plane.

Lines that are perpendicular to the picture plane are projected as points.

Planes that are perpendicular to the picture plane are projected as lines.

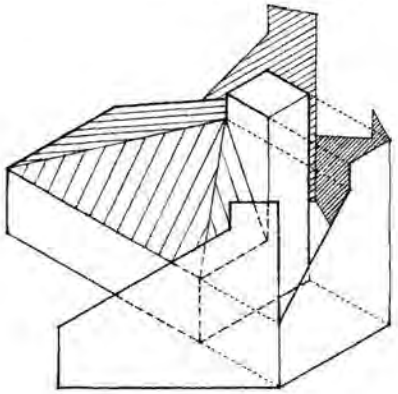
Curved surfaces and those that are not parallel to the picture plane are foreshortened.

- Note that the projected size of an element remains constant regardless of how far forward or back it is from the picture plane.



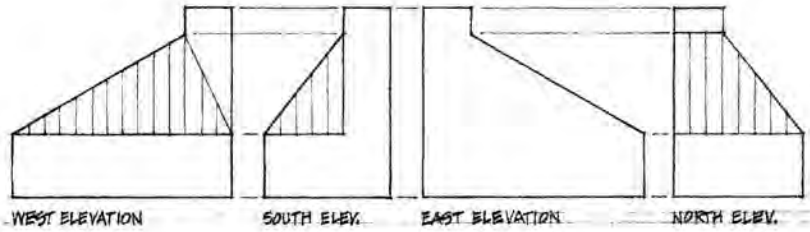
We can logically relate a series of building elevations to one another by unfolding the vertical picture planes on which they are projected. They can form a horizontal sequence of drawings, or be related in a single composite drawing around a common plan view.

- Whenever possible, we align related orthographic views so that points and dimensions can be transferred easily from one view to the next. This relationship will not only facilitate the construction of the drawings but will also make them more understandable as a coordinated set of information. For example, once a plan is drawn, we can efficiently transfer the horizontal dimensions of length vertically on the drawing surface to the elevation below. In a similar manner, we can project the vertical dimensions of height horizontally on the drawing surface from one elevation to one or more adjacent elevations.

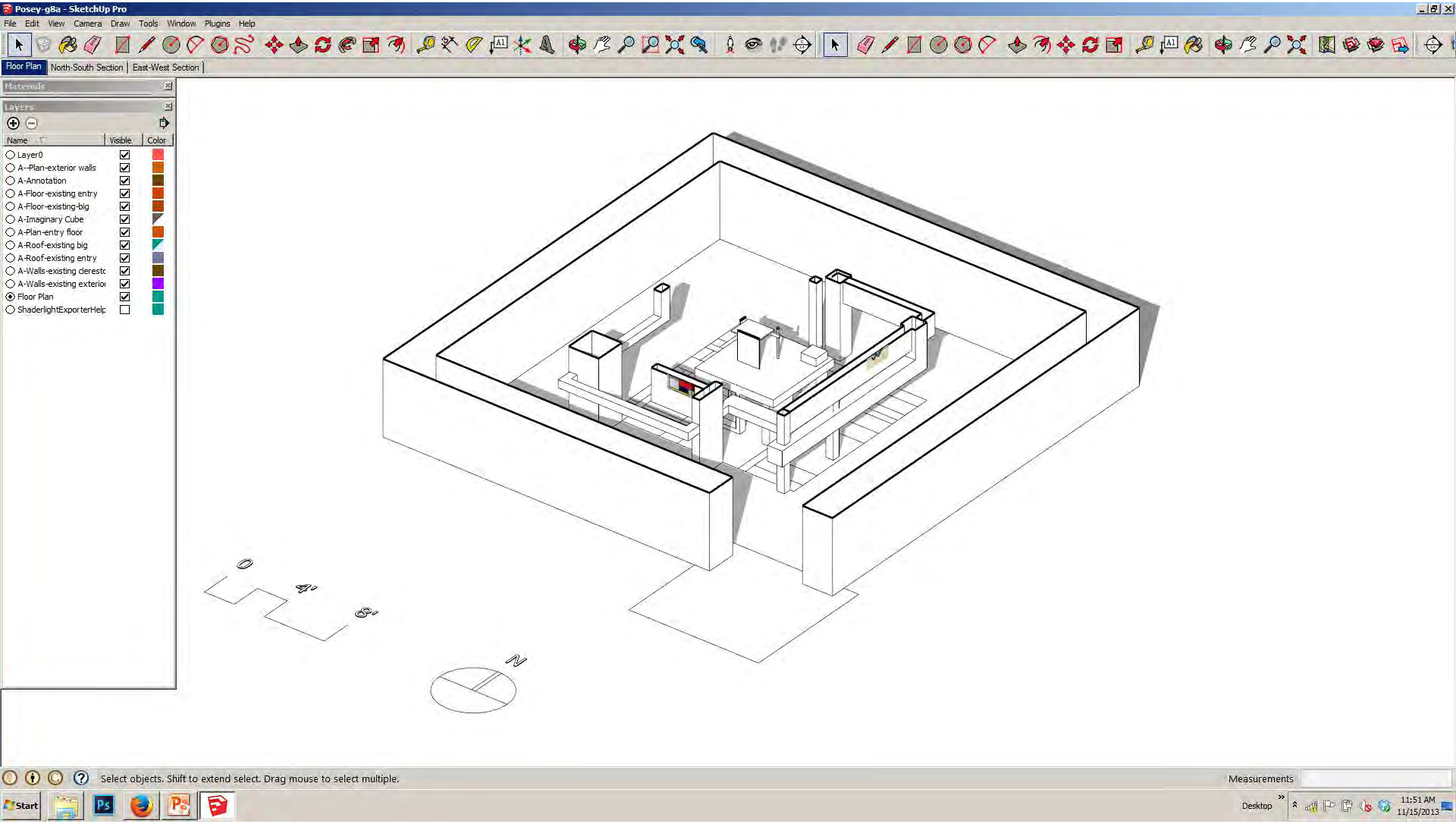


In architectural graphics, the orientation of a building to the compass points is an important consideration when studying and communicating the effect of sun and other climatic factors on the design. We therefore most often name a building elevation after the direction the elevation faces: for example, a north elevation is the elevation of the facade that faces north. If the face is oriented less than 45° off the major compass points, an assumed north may be used to avoid wordy drawing titles.

- When a building addresses a specific or significant feature of a site, we can name a building elevation after that feature. For example, Main Street Elevation would be the elevation facing Main Street, or Lake Elevation would be the elevation seen from the lake.

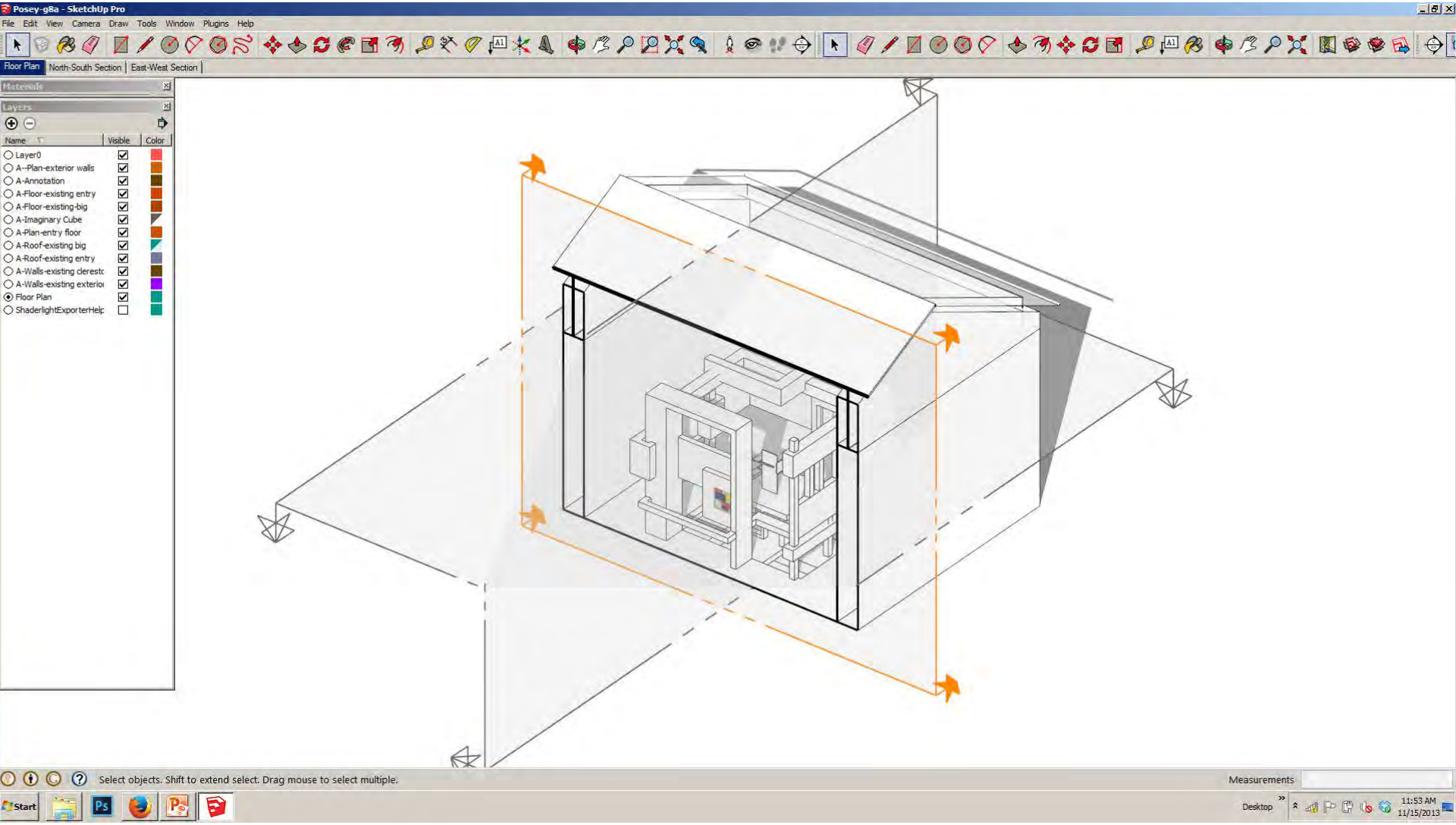


example student work:



ID 155:
INTERIOR DESIGN GRAPHICS 1
CORIE POSEY FALL 2012

example student work:



ID 155:
INTERIOR DESIGN GRAPHICS 1
CORIE POSEY FALL 2012

example student work:

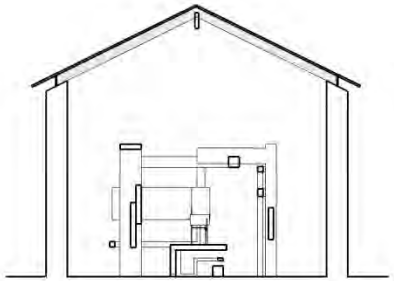
DeStijl Gallery
Corie Posey

Posey_G7B2a: Scene One
Rendered with Shaderlight and Entouraged

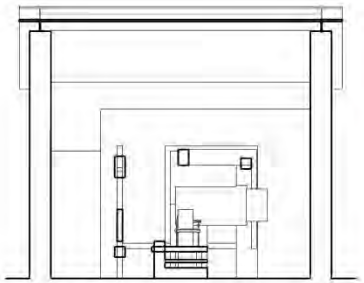
Posey_G7B2a: Scene Two
Rendered with Shaderlight and Entouraged

Posey_G7B2a: Scene Three
Rendered with Shaderlight and Entouraged

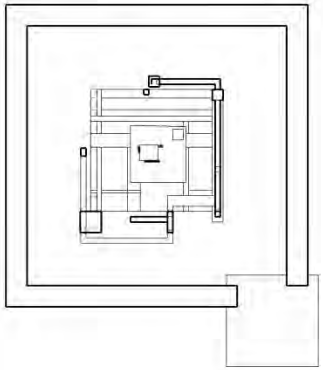
DeStijl Gallery
Corie Posey

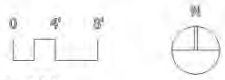


Posey_G8A
East-West Section



Posey_G8A
North-South Section





Posey_G8A
Floor Plan

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