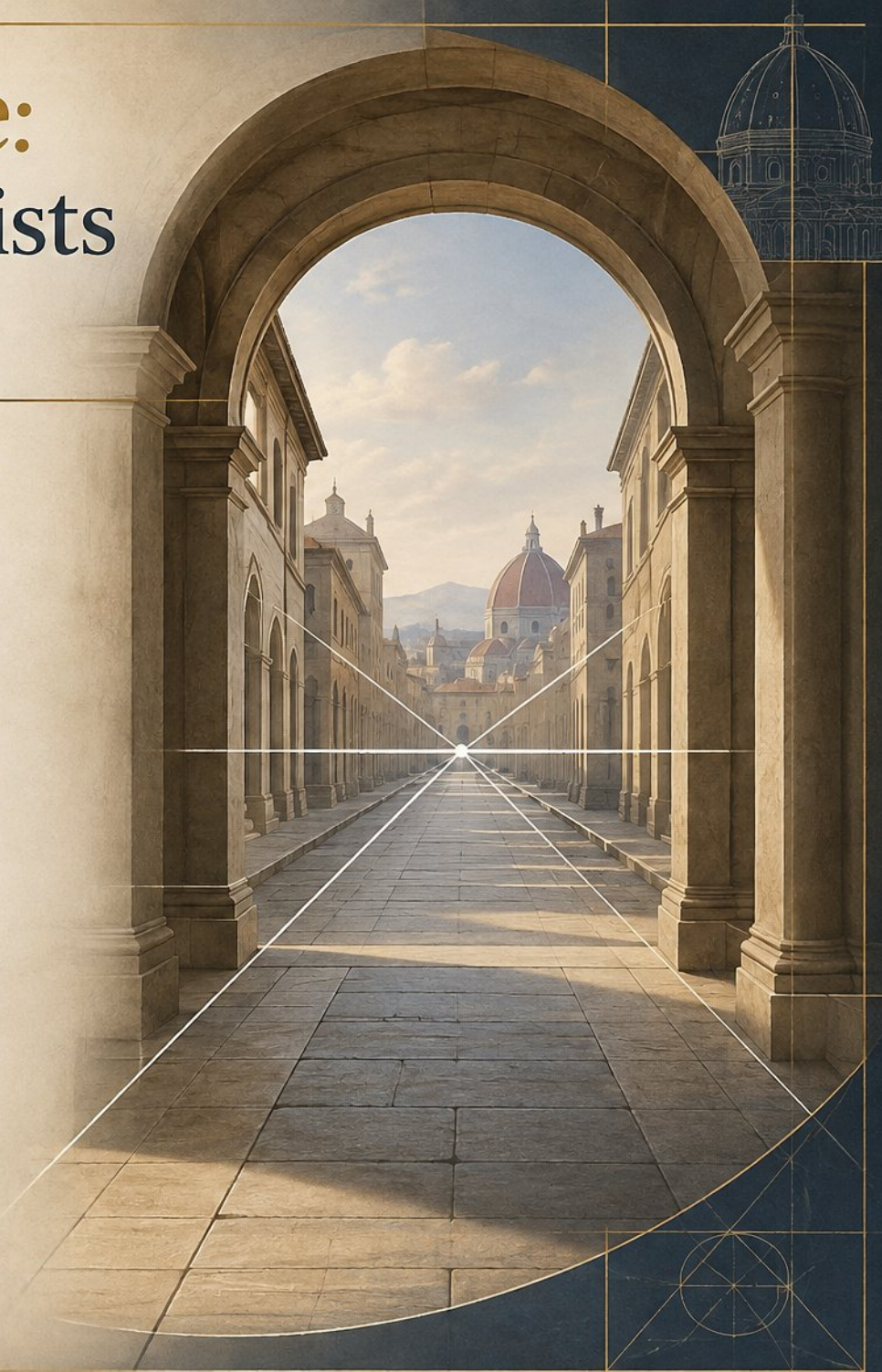


Linear Perspective:

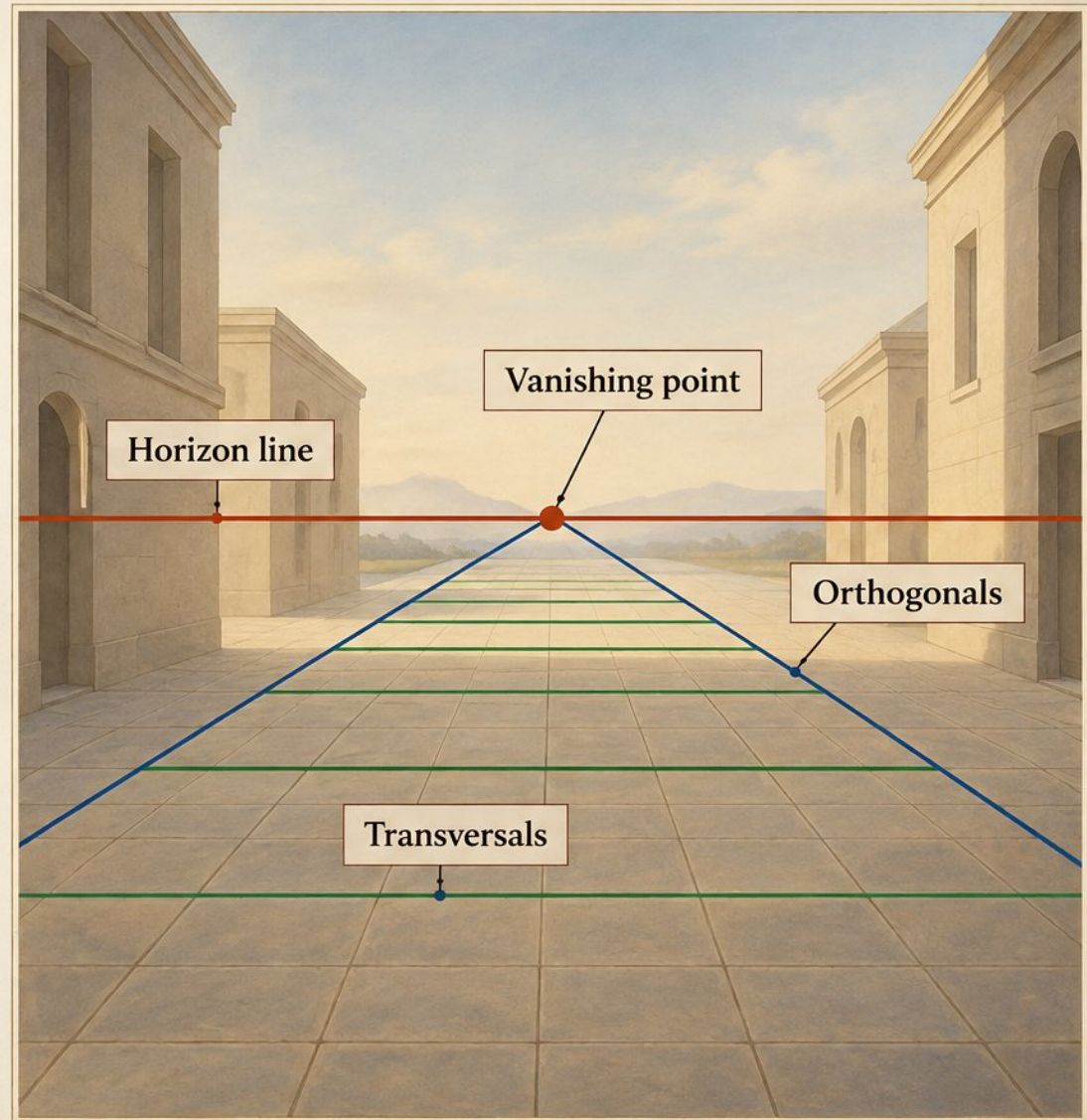
How Renaissance Artists Created Depth

- **Framing question:** how did a flat panel begin to look like a room or a street?
- **Linear perspective:** a geometric system for creating the illusion of depth on a flat surface
- Parallel lines receding from the viewer (orthogonals) converge at a single vanishing point on the horizon line
- **Renaissance turning point:** artists used vanishing points, horizon lines, and measured recession systematically, not intuitively
- **Goal:** recognize and describe the horizon line, vanishing point, orthogonals, transversals, and foreshortening
- **Practical payoff:** identify the system first, then notice where artists follow or deliberately break it



Core Vocabulary for Reading Pictorial Space

- **Horizon line:** the viewer's eye level across the picture, not the skyline
- **Vanishing point:** where receding parallel lines appear to meet on the horizon
- **Orthogonals:** the receding lines themselves, angling back toward a vanishing point
- **Transversals:** lines parallel to the picture plane; they never converge, only crowd closer
- **Picture plane, ground plane, eye level:** window surface, depicted floor, depicted viewpoint
- **Key misconception:** linear perspective is not atmospheric perspective, and not just smaller shapes



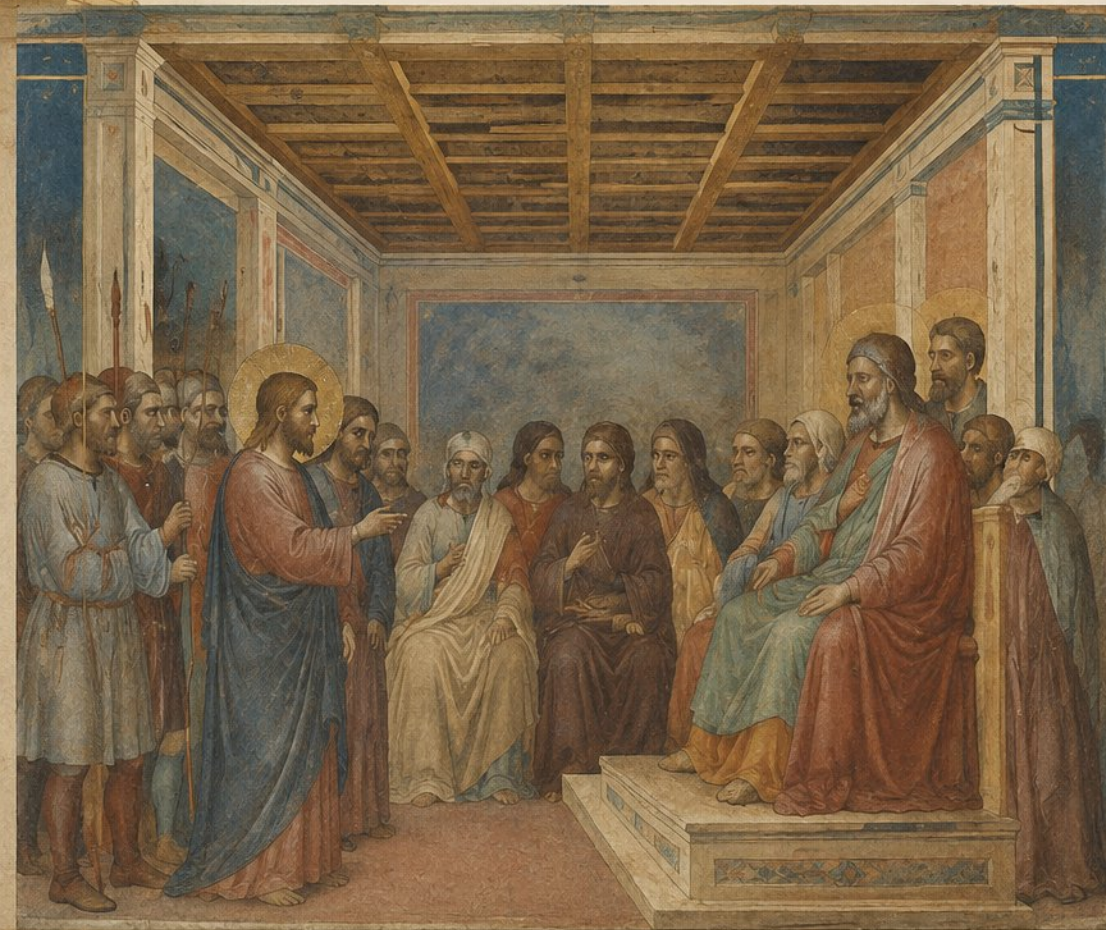
Before Perspective: Medieval and Byzantine Space



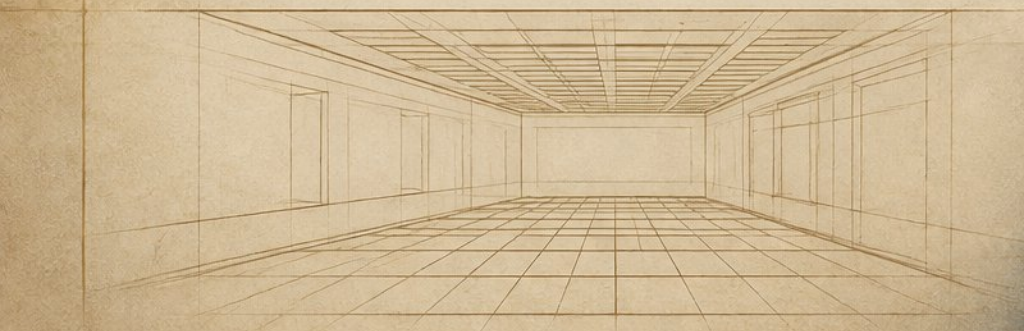
- Medieval images project imagined, not optical, space
- Hierarchical scale: important figures shown larger, not closer
- Flat gold grounds and shallow stages signal the heavenly realm
- Reverse perspective and tilted thrones depart from everyday vision
- Giotto adds overlapping figures, platforms, and implied volume
- Big question: what changes when a painting pretends to be a window?



Giotto: Convergent Lines Before the Rules



- Christ Before Caiaphas (c. 1305): ceiling rafters appear to converge convincingly
- Geometric analysis: no true single vanishing point; convergence is inexact
- Working principle: lines above eye level incline down as they recede
- Lines below incline up; lines left angle right, lines right angle left
- Platform settings and overlapping figures create coherent acting space
- Discussion: if it convinces but isn't exact, what separates intuition from system?



ART
OBSERVATION
DEEPER SEEING



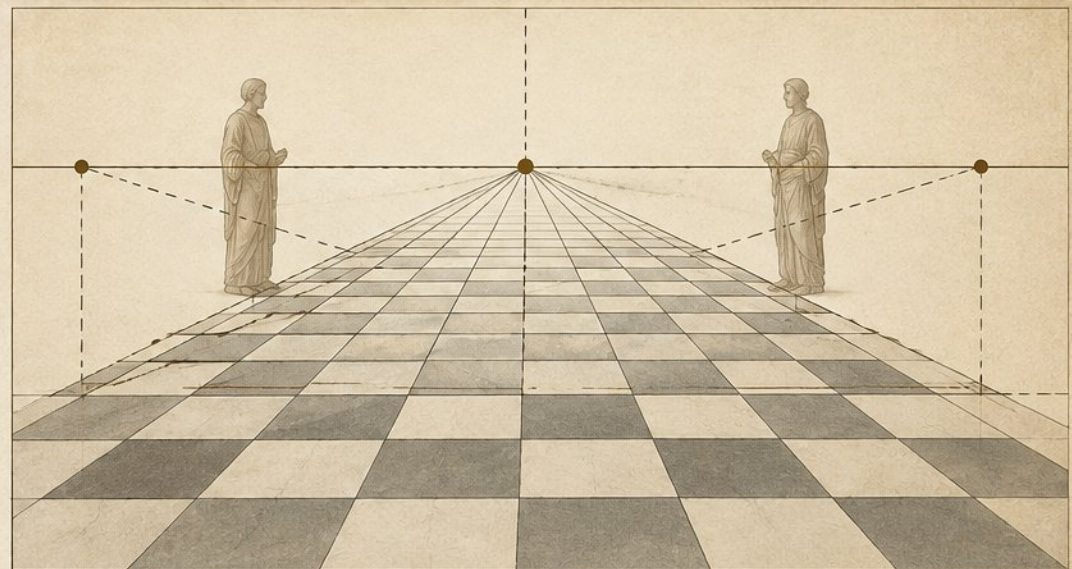
Brunelleschi's Experiment: Perspective as Demonstration

- Florence, c. 1413–1420: Brunelleschi paints the Baptistery from inside the cathedral doorway
- Peephole viewer, a mirror, and a direct comparison of painting and real building
- A flat panel produced an almost exact illusion from one fixed spot
- No written record survived; the method passed verbally to Masaccio, Masolino, Donatello
- Key idea: one correct viewpoint—move the eye and the illusion breaks



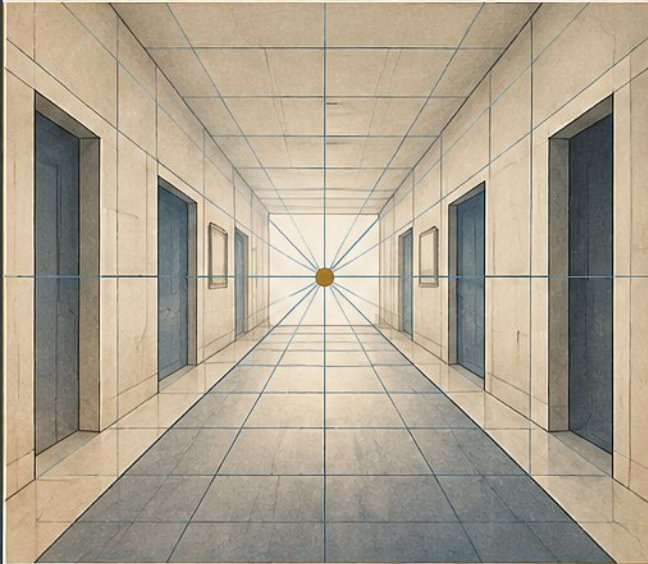
Alberti's Rules: On Painting and the Legitimate Construction

- Alberti's *De pictura* (c. 1435) is the first written account of linear perspective
- The picture is an open window through which the painter looks
- *Costruzione legittima*: step-by-step method for drawing a checkerboard pavement
- Centric point (later vanishing point) sits at the height of the figures
- Orthogonals radiate from it through divisions of the base line
- A height line, distance point, and diagonal check space the transversals
- Perspective became a teachable technique with rules, not a personal trick

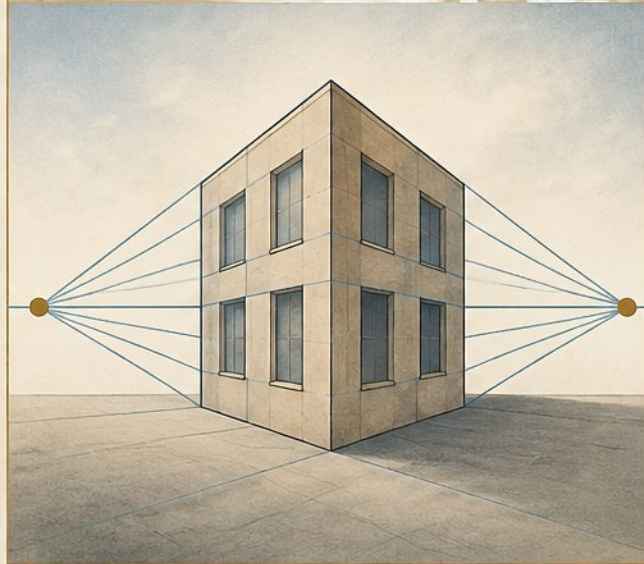


One-Point, Two-Point, Three-Point: Which Grid Fits the View?

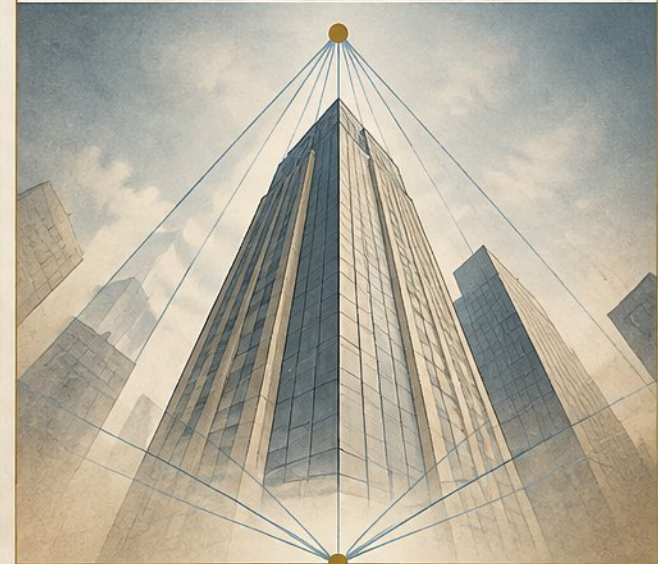
One-Point



Two-Point



Three-Point



- One-point: single vanishing point; corridors, rooms, and head-on flat walls
- Two-point: two vanishing points; corners of buildings, where two sides recede
- Three-point: add a vanishing point above or below; verticals lean, as on tall towers
- Verticals stay vertical in one- and two-point; only depth edges converge
- A scene holds many vanishing points; the labels describe the box you draw

Building Depth Step by Step: The Construction Process

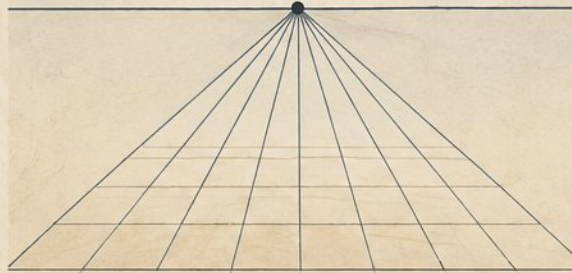
1

Set the picture plane and scale the front figure using a braccio-like module



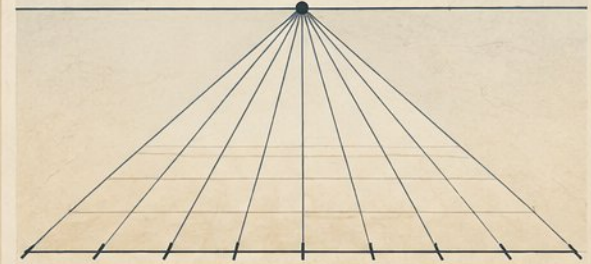
2

Place the horizon at eye level, then fix the centric point on it



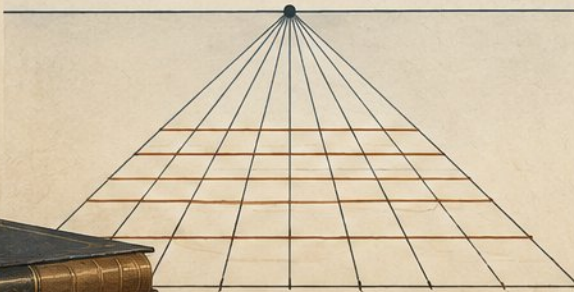
3

Mark equal base-line divisions and connect them to the centric point for orthogonals



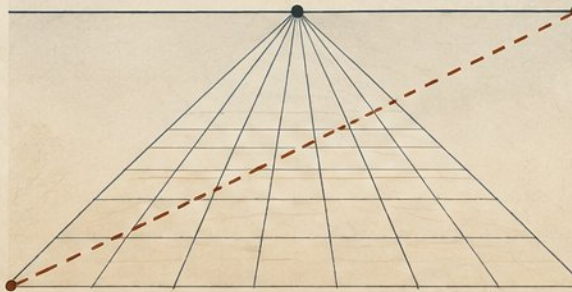
4

Use a side view, height line, or distance point to space the transversals



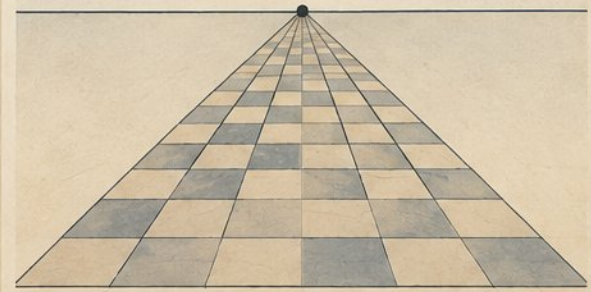
5

Check with a 45-degree diagonal: floor-square corners meet the horizon at the distance point



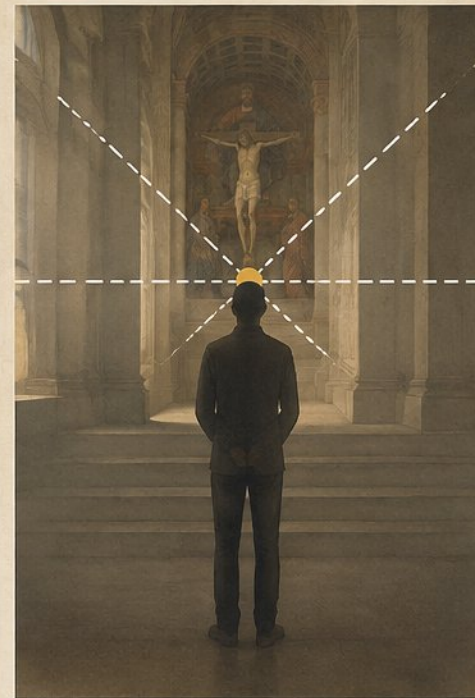
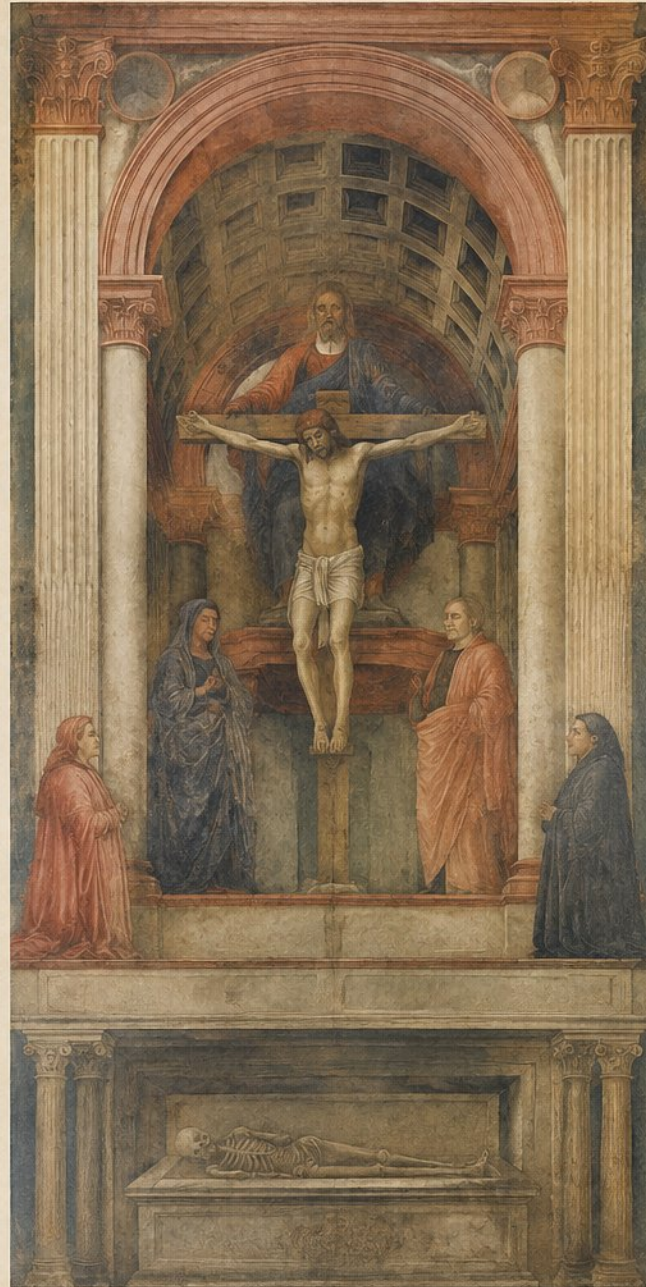
6

Equal real intervals do not look equal, so receding tiles must be drawn shorter



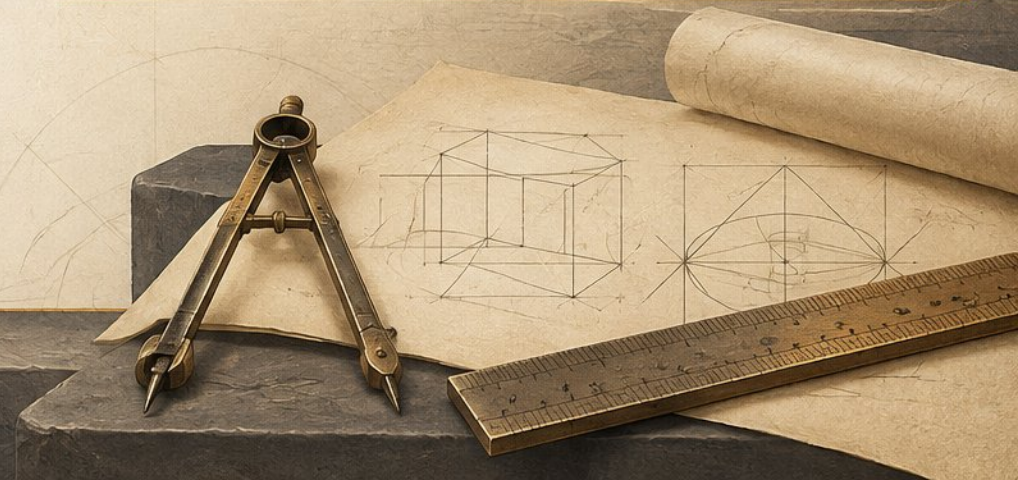
Case Study: Masaccio's Holy Trinity

- Holy Trinity (c. 1425–1427), Santa Maria Novella, Florence: an early monumental use of linear perspective
- Illusionistic chapel: barrel vault, coffered ceiling, pilasters, columns make the wall appear to open
- Vanishing point near a standing viewer's eye level; orthogonals traceable through the vault's coffers
- Masaccio adapted geometry for visual and theological effect, with deliberate deviations from strict mathematics
- Looking prompt: from where would you have to stand for the chapel to look real?

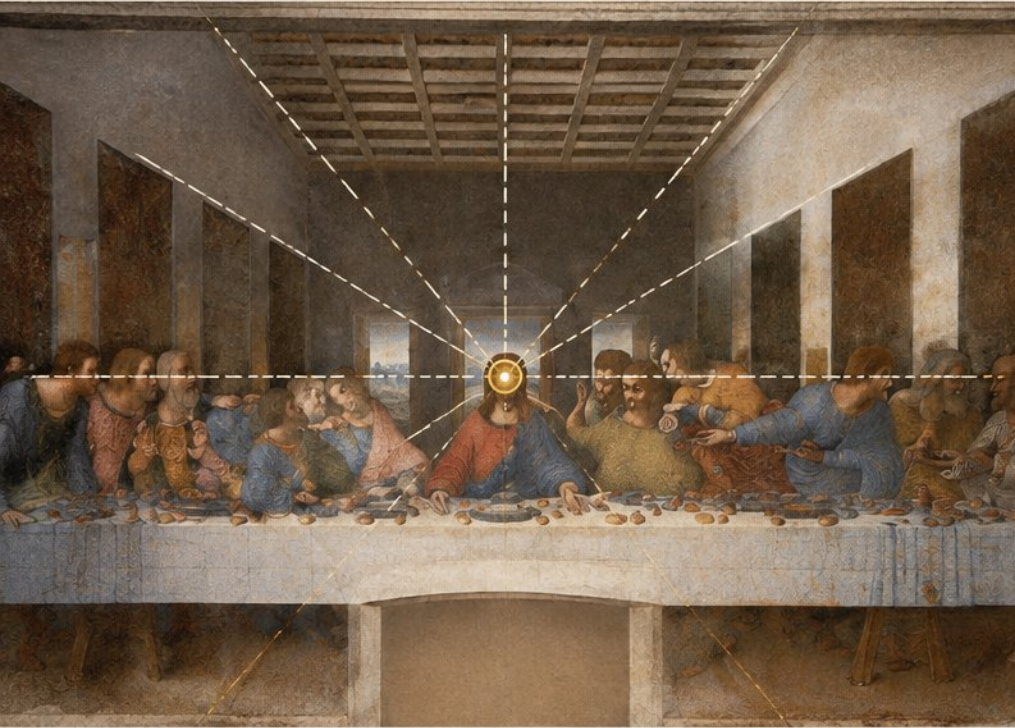


Case Study: Piero della Francesca and the Ideal Space

- Painter and mathematician; *De prospectiva pingendi*, first book devoted entirely to perspective
- *The Flagellation of Christ* (c. 1459–60): strict geometry, divided sacred and foreground scenes
- Treatise covers plane figures, solids, and a rigorous plan-and-elevation method
- Method anticipates modern 3D representation techniques by centuries
- Ideal city views: perspective serves narrative clarity and mathematical beauty
- Discussion: when does perspective become the subject rather than a tool?



Case Study: Leonardo's Last Supper and Raphael's School of Athens



- Leonardo: vanishing point at Christ's head, centered on the table
- Room's ceiling and wall lines converge on the sacred figure
- Ideal viewpoint roughly 10 meters back, tied to the refectory
- Raphael: one-point construction organizes philosophers and architecture
- Leonardo centers the eye; Raphael gathers and distributes a crowd

Linear Perspective plus Atmospheric Perspective

- Linear perspective: converging lines, vanishing points, foreshortened spacing
- Atmospheric perspective: hazier, cooler, softer, lighter forms with distance
- Renaissance painters combined both systems to heighten depth
- Leonardo's treatment of light and distance is a prime example
- Also watch for overlapping, size diminution, shadow, texture gradient
- One painting may use several depth systems at once



When the Rules Break: Mannerism, Baroque, and Anamorphosis

- Mannerism tilts and stretches space: distortion, elongation, and unease over Renaissance balance.
- *Di sotto in su* and *quadratura* push ceilings to total immersion; Pozzo's Sant'Ignazio requires one viewpoint.
- Anamorphosis hides a legible image in a stretched projection, as in Holbein's skull (1533).
- Baroque trompe l'oeil uses Albertian conventions to their extreme, subverting the transparent-window fiction.
- Looking prompt: find where the perspective is deliberately inconsistent, and ask why the artist broke it.



Museum Visit Checklist:

Finding Depth in Real Paintings



Step 1 – Find the horizon line:
it matches depicted eye level,
not the canvas top



Step 2 – Locate the vanishing point,
then trace the orthogonals
leading to it



Step 3 – Check scale: do figures,
tiles, and architecture shrink
consistently with distance?



Step 4 – Look for foreshortening,
plus atmospheric cues: haze,
color shift, softening contours



Step 5 – Ask what perspective
does: centers a sacred figure,
organizes a crowd, expands a ceiling



Practice on three works,
comparing how each uses or
resists the system



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