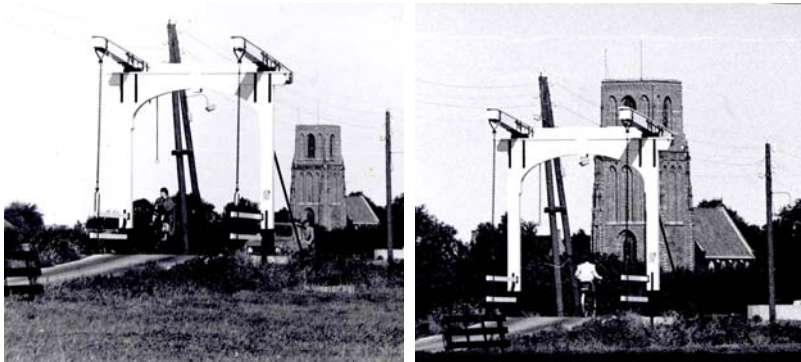

Werkbladen Perspectief

Michiel Doorman & Aad Goddijn
NWD, 2018

Oefening 1. Verschillen in schijnbare verhoudingen verklaren

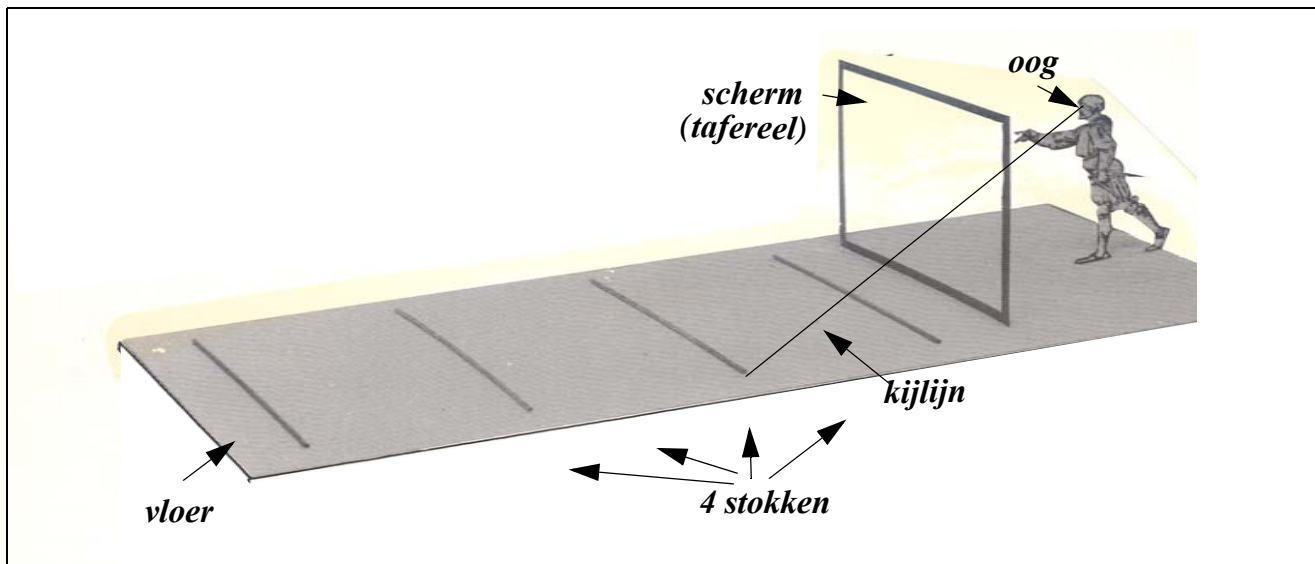
Wat is hoger, toren of brug?



Verklaar dit fenomeen met een schets

**Oefening 2. De methode van Brunelleschi zelf uitvoeren;
met zij- en bovenaanzicht (A, overzicht van situatie)**

Voor het gemak: leg de vier figuren A - D naast elkaar op tafel (werk samen)

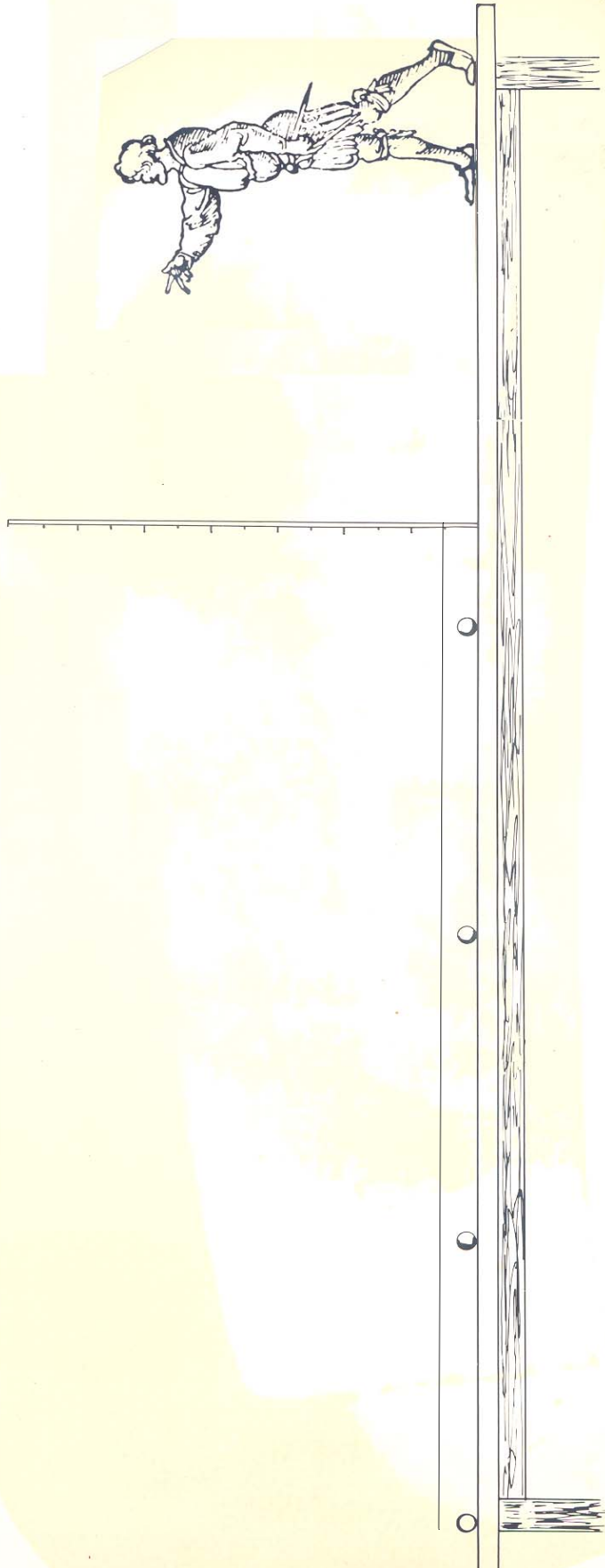


Bedoeling: op bladzijde (D) de exacte plek aangeven waar de kijklijn door het scherm gaat; door gebruikmaken van aanzichten B en C.

Dit doen voor alle 8 stokeinden.

(B) Vind schijnbare hoogten in het zijaanzicht

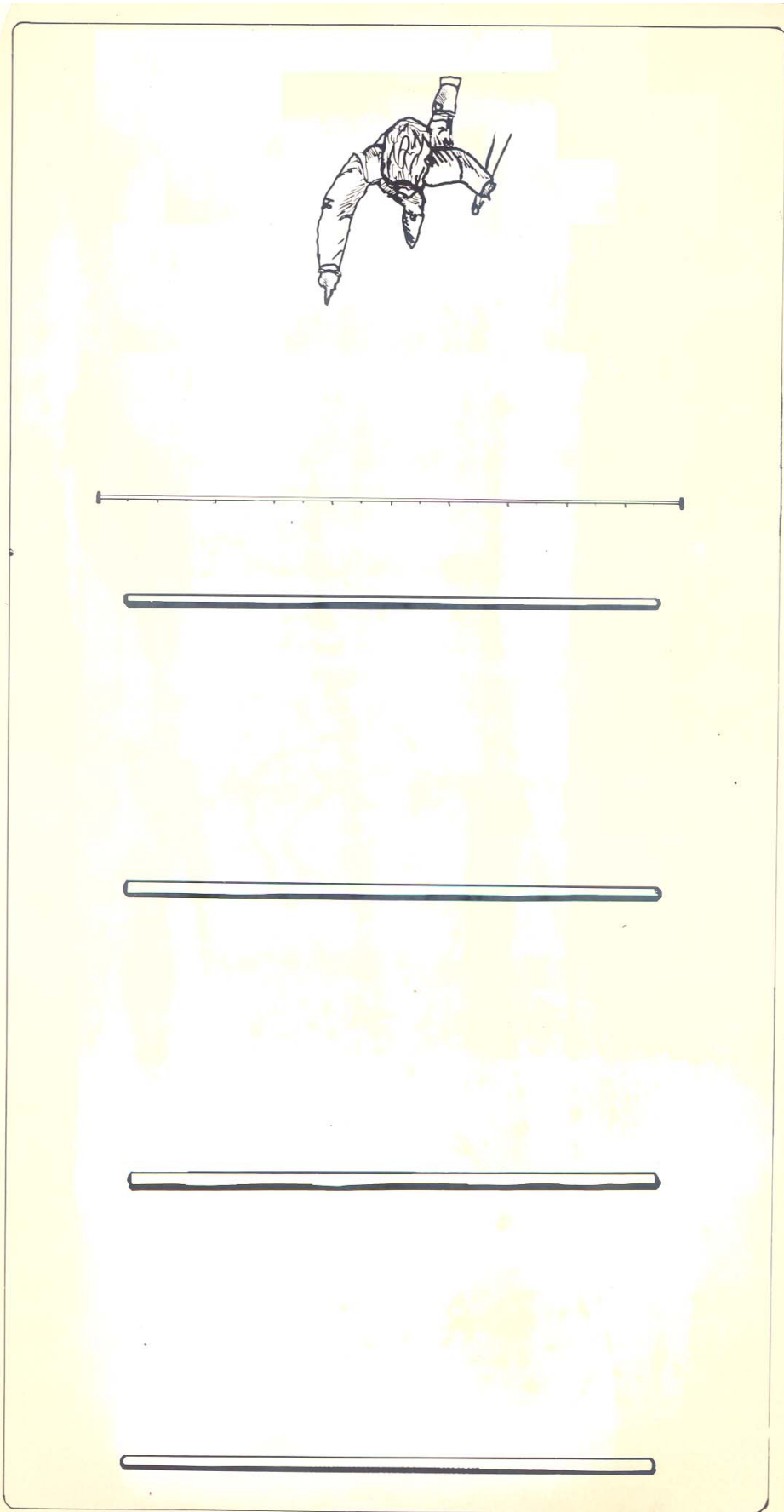
» 109. Here is a side-view. How high above the table should the sticks be drawn on the screen? Draw the lines you need to find this out.



Nearest stick appears high.
Second stick appears high.
Third stick appears high.
Furthest stick appears high.

(C) Vind schijnbare links-rechtsposities in bovenaanzicht

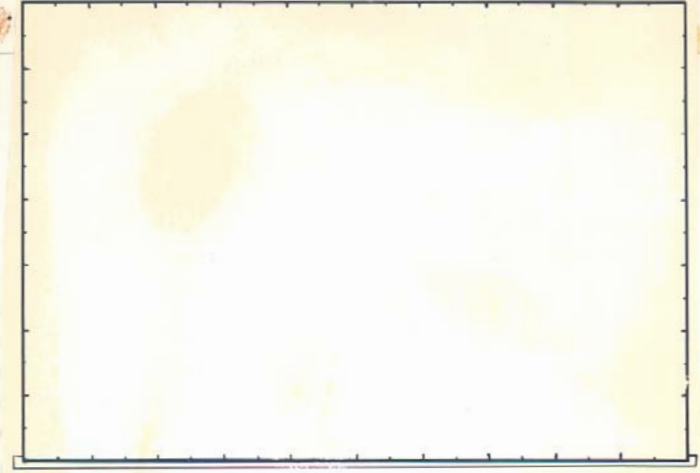
» 110. A top-view of the same thing. Find just where the man's eye is.
How long do the sticks appear on the screen?



Nearest stick appears: long.
Second stick appears: long.
Third stick appears long.
Furthest stick appears long.

(D) Combineer op het Tafereel (scherm)

111.



Using the heights and lengths which you found in the last two problems you can now draw exactly what you see through the screen.

Here is the screen as it stands in front of the little man.

Draw the sticks on the screen. Does it look convincing?

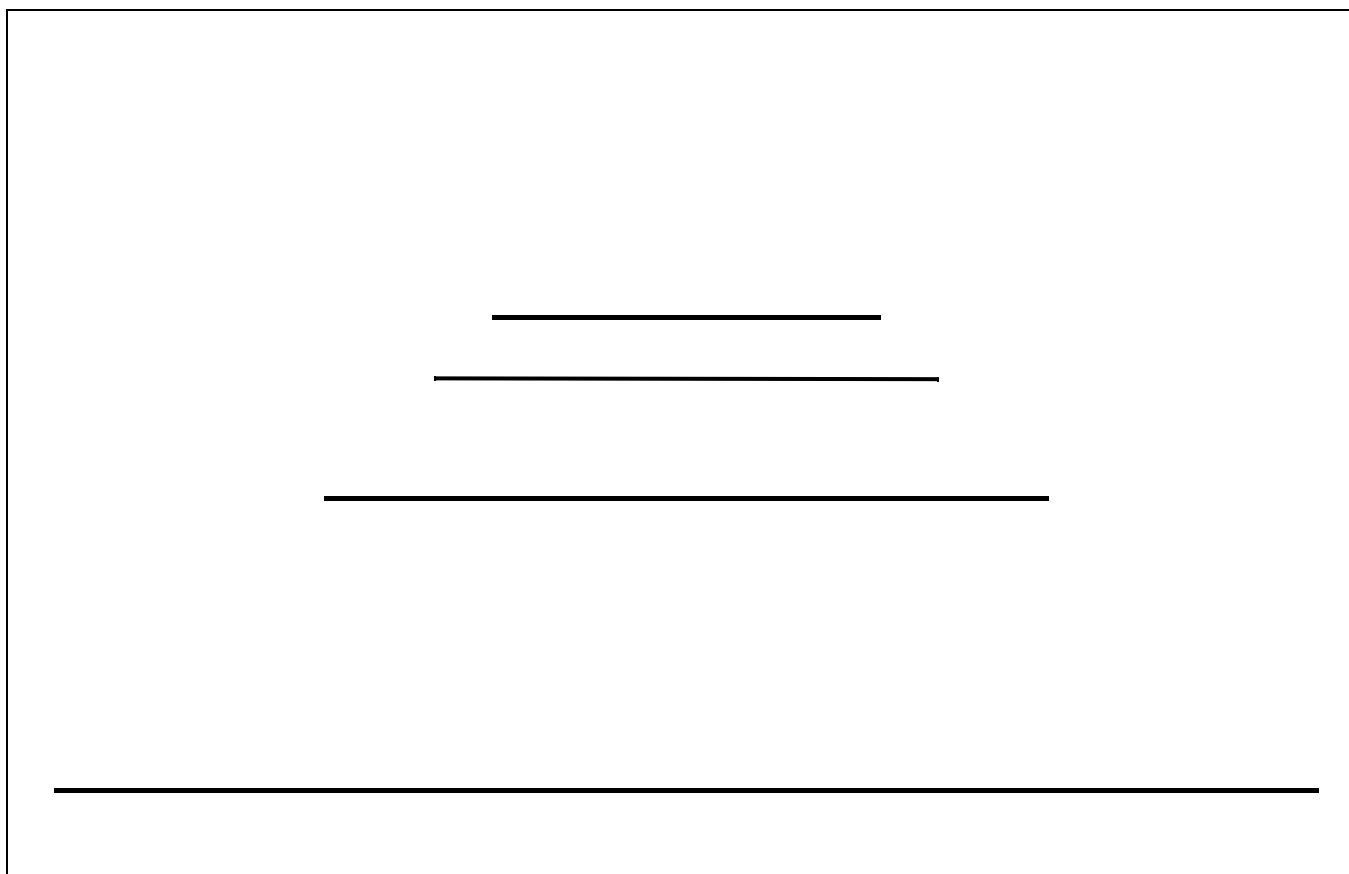
Oefening 3. De vijfde stok, werken op het tafereel.

De getekende uiteinden van de vier stokken liggen op twee rechte lijnen in het tafereel. Want: rechte lijn in het object wordt rechte lijn in het tafereel.

Voeg die lijnen toe.

Door nog meer onzichtbare lijnen te gebruiken, kun je *werkend in alleen het tafereel* exact de vijfde stok tekenen. *Doe dat.*

Tip: denk aan een constructie voor het bepalen van het midden van een stok.

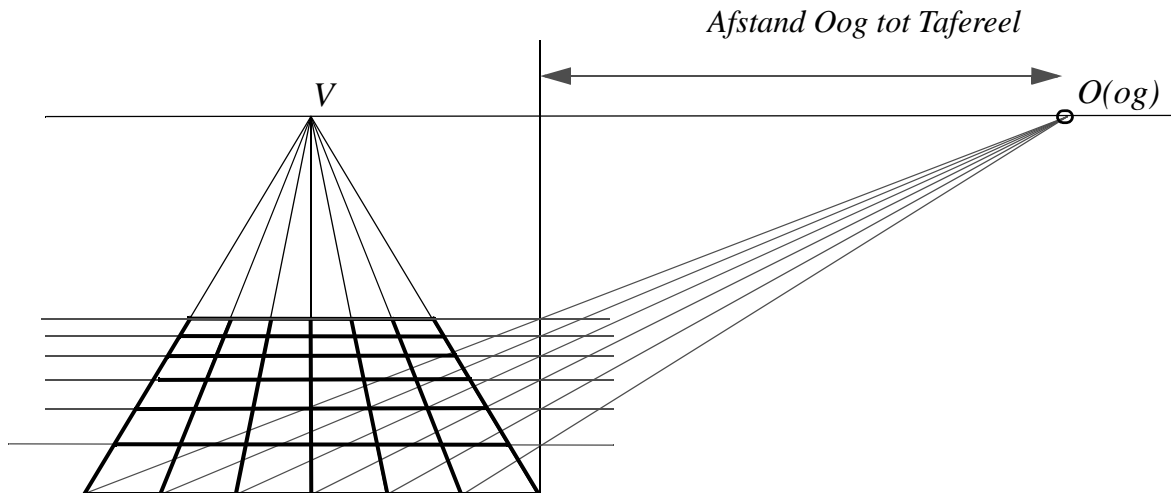


Oefening 4. Costruzione legittima

De 'juiste constructie' om een tegelvloer in perspectief te tekenen.

Alberti (Della Pittura, 1436).

Voor en zij-aanzicht liggen over elkaar!

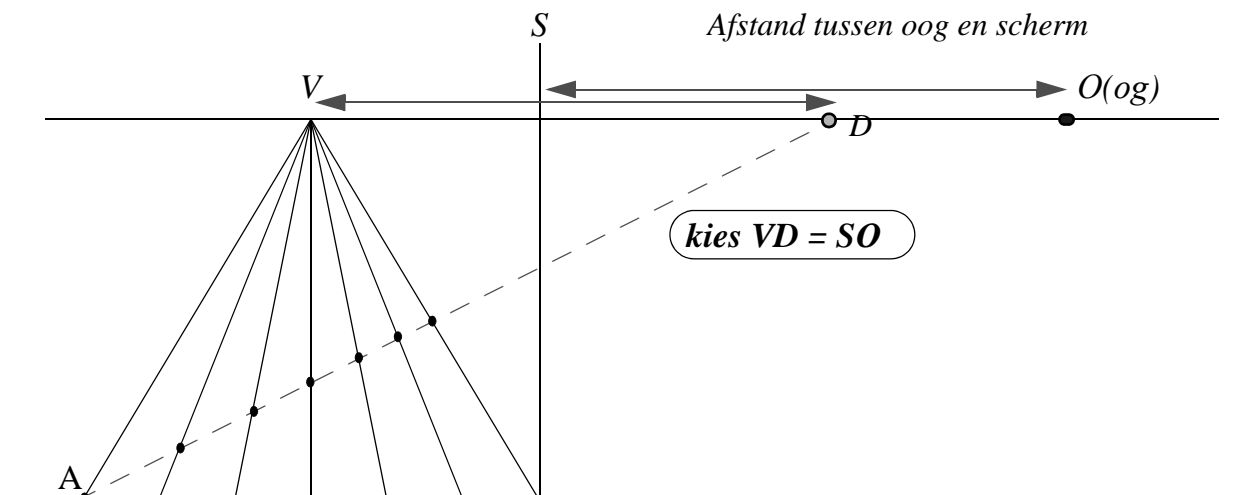


Voer de controle met de diagonaal van de 6 bij 6 vloer uit.

De diagonaal snijdt de horizon. Hoever ligt het snijpunt van van V vandaan?

Oefening 5. Verkorting, via de diagonaal van de vloer

Gebruik het vluchtpunt van de diagonalen



De methode zegt: neem VD gelijk aan SO . Teken eerst de diagonaal DA om de transversalen direct op de juiste hoogte te krijgen. Teken daarna de dwarslijnen van de vloer.

Verklaar de keuze $VD = SO$. (tip: gebruik een bovenaanzicht)

Piero's perspective

Renaissance painter Piero della Francesca plotted perspective so meticulously and consistently that he was able to make the divine, with its miraculous lack of optical logic, shine out in contrast to the rest of the picture.

Martin Kemp

Mention the interplay of art and science — or, more specifically, any instance of the influence of art on science — and perspective is likely to feature prominently. Discovered early in the fifteenth century by the great Florentine architect Filippo Brunelleschi, and first codified in writing by Leon Battista Alberti in his little book *On Painting* in 1435, perspective not only became the stock mode of representing any three-dimensional form in science and technology, but also played a key role in the development of projective geometry around 1600 and of descriptive geometry two centuries later.

For many artists, perspective assumed the status of a convenient technique — a routine geometrical-cum-optical trick to establish the illusion of a space behind the surface of a picture. But for a minority of theoretically inclined artists it acted as a research tool, through which the picture became an experimental field for the geometrical construction of illusions emulating the optical force of real space.

Even more exceptionally, the mastery and use of optical rules could constitute an ethical imperative. The greatest of such artists was the Renaissance painter, Piero della Francesca. Even a quick inspection of his relatively small painting of the *Flagellation* will reveal the meticulous construction of an exceptionally deep platform, passing back from the zone in which three figures debate the nature of Christ's torment, as disclosed in the middle ground, to a distant piazza. Careful analysis reveals the extremes to which he went to comply with mathematical rigour. For example, the complex tile pattern within the loggia is projected with scrupulous preci-



Piero della Francesca, *Flagellation*, c. 1465.

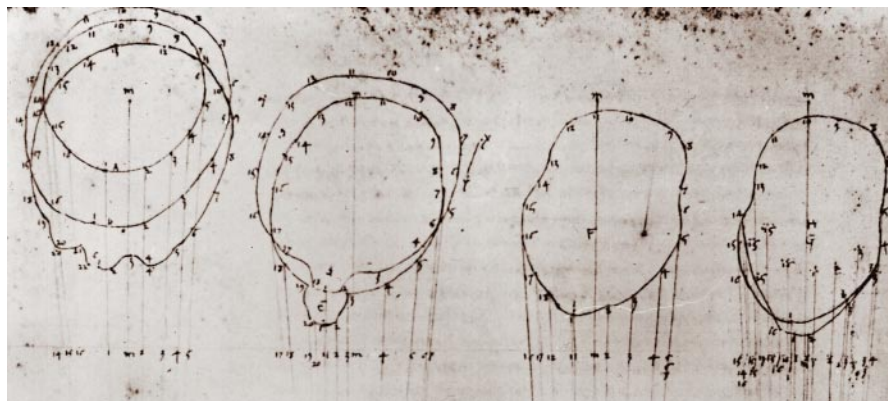
sion, and is founded upon a series of related squares, the larger of which have side lengths equal to the diagonal of the smaller (i. e. $\sqrt{2}$).

Piero wrote books on practical mathematics with simple algebra, on the five regular polyhedra, and, unsurprisingly, on *The Perspective of Painting*. His treatise on perspective shows how to plot the outlines of forms systematically on to a foreshortened plane, and how to use the plan and elevation of solid bodies to project them point-by-point on to an intersecting plane from a fixed viewpoint. The illustrations below show the first and final stages in the plotting of points disposed in horizontal bands around a head. The final outline results from the coordination of points projected from sections and profile. We know that he followed such meticulous procedures in wall paintings,

even when the effects would be so far away from the spectator that they could not be appreciated. Getting things right was integral to his contract with God's design of nature.

But, amid this extreme rationality, he was a painter of miracles, which lie outside optical logic. In the *Flagellation* the space occupied by Christ, and the section of ceiling above his column, are paradoxically flooded by a burst of light from a source within the architectural space. Only Christ is aware of this miraculous intrusion. It is the very logic of Piero's perspectival consistency that allows him to highlight the supra-normal power of the divine. □

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Projection of successive horizontal sections of a head on to picture plane, from Piero della Francesca's *The Perspective of Painting*.

