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From the points in the photo (x', y', z') and α and β, we find the points in space (x, y, z), and, using pc, project these into the z=0 plane. We have now, scaled to the photograph size, the wall and the rectangle.
The found projection is valid not just for the measured rectangle, but for any point in the photograph. Actual calculations are on the next page.

Homogeneous Analemmatic Sundial *H.J. Hollander* *15*

Homogeneous analemmatic sundial with vertical gnomon. The ellipse of an analemmatic sundial may be considered as constructed from two circles. See Figure 1. The hour points on the circles are evenly spaced. They are moved to the ellipse by a translation over A and parallel to the minor axis of the ellipse (the north-south line). Here, A = C * cos (t) where t is the hour angle, and C2 = A2 + B2. It is easy to construct the cosine of an angle mechanically. See Figure 3. A rod K rotates around a centre p. A distance C away is a small plug q that moves through slit S. Rotating the bar will also cause centre p to move through another slit S. The result is that the grey disk moves with respect to the circle with the homogeneous hour scale. The grey disk contains the usual date scale that we know from the analemmatic sundial. See Figure 5.
Note that the distance between centre p and the intersection of the slots S is equal to C * cos (t), and therefore equals A.
If we place a vertical gnomon in position M on bar K, and if we make its shadow fall over the actual date on the disk, then the gnomon indicates the time on the homogeneous hour scale.

Homogeneous analemmatic sundial with pole style. The ellipse of an analemmatic sundial is the result of the vertical projection of the equator onto the ground. See Figure 7. When we project along the polar axis, or the pole style, we get another ellipse. The ratio of the major and minor axes is the same for both ellipses. However, the major axis of the pole style ellipse is directed north-south. The moving centre disk of the homogeneous analemmatic sundial now moves east-west.
In Figure 8, we see a version of this sundial in plastic. The blue disk is turned such that the shadow of the pole style falls over the red dot, marked in the right photograph with a red circle. One then reads the time on the homogeneous hour scale on the spot marked with the red square. The inner yellow disk moves along an east-west line when the sundial is operated.

Self-aligning homogeneous analemmatic sundial. A combination of the vertical gnomon with the pole style yields a self-aligning sundial. We have to choose how the central disk moves. The north-south movement keeps the gnomon a little farther from the centre. The pole style dial must operate using a translation over B (see fig 2). With minor modifications, we arrive at fig. 9: set the dial so that the gnomon shadow falls over the actual date on the centre disk, while that of the style falls over the dot. When this is accomplished, the sundial will be aimed north-south.

Longitude adjustment. Because the sundial is homogeneous, its reading may be adjusted for longitude. To this end, the bottom shows all time zones (including some "summer time zones") and a longitude scale.
When the geographical longitude of the location of the sundial is turned opposite the correct time zone, the sundial indicates legal time.
The sundial does not correct for the equation of time.

Eisinga Planetarium extension inaugurated *F.W. Maes* *26*

On 17 March 2008, Education Secretary Plasterk opened the "renewed" Franeker Planetarium. The 1781 planetarium is, of course, unchanged, but it secured the use of the adjacent, equally historical, premises. The extra room allows a more spacious entrance and more displays.
The Planetarium owns a surprising number of small sundials, as well as many other instruments.

Trifilar sundial by Bernard Rouxel *F.J. de Vries* *28*

Designer Rouxel won the second prize in the Italian "Ombre del Tempo" contest with this original south polar sundial.
Parallel to the dial face run three wires; one east-west, the others making equal but opposite angels to it. Their shadows will usually form a triangle. During the day, this triangle will move and change. On local noon, it will shrink to a single shadow point. The combined noon shadow points over the year describe a noon line, which turns out to be straight. This dial, than, reads noon and date.
More is possible, however. It appears that this principle holds for horizontal sundials for any latitude, not just zero (which the Rouxel design equates to). The figure shows the situation for 52 degrees north. The noon line is now entirely to the right: the noon sun is always south.
Because *any* sundial is equivalent to a horizontal dial *somewhere*, the same principle must work on any inclining and declining plane. The example shown is for 52 degrees latitude, 70 degrees inclination (that is, 20 degrees from the vertical), and a declination of 31,23 degrees south to west.
This is equivalent to a southern hemisphere horizontal dial with a two-hour time adjustment. This trifilar dial will indicate not noon, but 1400 hours.
The appendix gives practical construction calculations. – The additional figure shows a cube with inscribed saddle surface, a hyperbolic paraboloid. The three lines represent the three wires of the trifilar sundial.

Double line-of-light sundial *F.J. de Vries* *33*

Instead of a pole style shadow, a line of light may be used to read a sundial. The horizontal sundial shown here forms a line of light using the slit between two east-west aligned stone slabs. The slabs are inclined according to local latitude.
The thickness of the slabs reduces the duration of the visibility of the line of light, despite the bevelling used here. In this example, the useful readout of the sundial would be limited to the period between the hours of 8 and 16, local apparent time. A second sundial enables the user to read the other hours. Here, the slit between two vertical slabs, aligned north-south, forms the line of light. This sundial works during the early hours of 4 to 8, and during the late hours of 16 to 20 hours, local apparent time.
The figure shows the total hour line pattern. The readout is in local apparent time; one sundial uses Roman numerals, the other Arabic. A special date line works with an index fixed between the east-west slabs.
Idea and realisation: sculptor Liesbeth Crooijmans, Arnhem, 2007.
Pattern calculation: Fer de Vries. Material: black granite.
Dimensions: 600 mm x 800 mm (24 in x 31 in).

Sundial or sculpture? *F.W. Maes* *35*

A remarkable undial, on offer for Mother's Day. Everything is moveable.

Nought but a postcard *J.A.F. de Rijk* *36*

Prototyped using the Chinese takeaway bill, this dial is best constructed out of a postcard. It combines a horizontal dial pattern with a line of holes gnomon.

Work on De Haere sundial and folly *"De Stentor"/Sasbrink* *37*

Not only will there be restoration work done on the sundial and on the folly tower, but there will also be constructed a very large garden sundial. The photograph gives an impression of its size: the gnomon is 7m (23') long.

Chronicles of 2007 *Secretariat* *52*

Fer de Vries resigned his board membership and was made honorary member.
Hendrik Hollander took office as secretary of De Zonnewijzerkring. - Bote Holman received honours in the professionals section of the 10th Italian sundial makers contest. - The three Utrecht meetings and the excursion were all well attended. -
On 31 December 2007, De Zonnewijzerkring had one hundred and thirty full members, as well as two honorary members: De Vries and De Rijk.