

Year 2003

Article of the month November

Style triangle

Gnomon, Pole style, Substyle, Style height

This photograph by Tony Moss shows a nicely done shadow caster. It is a part of an old English horizontal dial, but could also serve on other, randomly oriented, flat sundials.

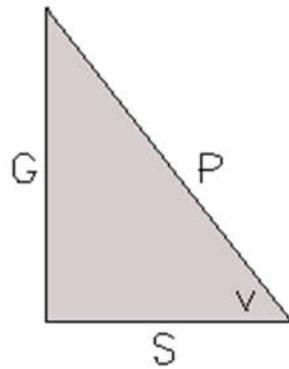
We will discuss some terms associated with such a shadow caster.



The shadow caster can be a simple right triangle. We call this a **style triangle**.

To read the sundial, we only need the shadow of the hypotenuse.

We call this a **pole style**, or simply **style**, marked P in the drawing. This side of the triangle should be straight and parallel to the axis of the earth, or celestial axis.

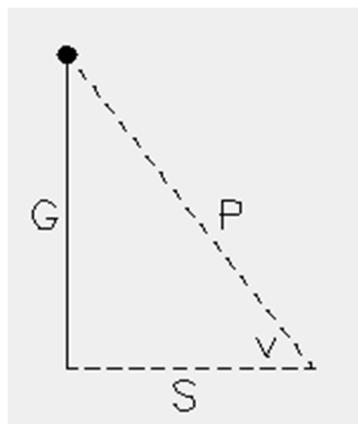
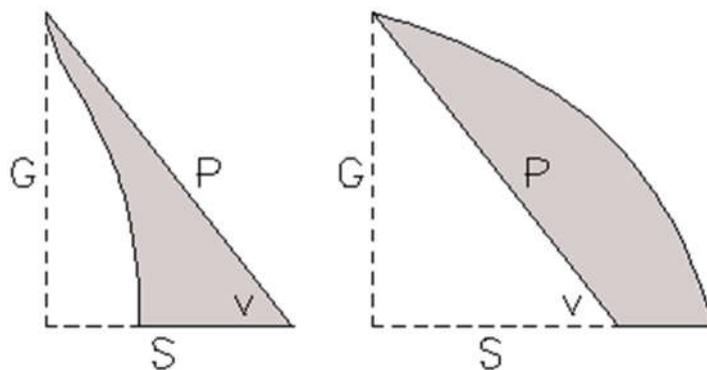


The perpendicular projection of the pole style into the dial face, where the style triangle is fixed, is the **substyle**, marked S.

The angle between the pole style and the substyle is called **style height**, marked v . For a horizontal sundial, v equals local latitude, but for other sundials this angle must be calculated.

The three drawings below show alternative shapes for a shadow caster.

In the third drawing, the pole style has been reduced to a single point and is no longer physically present, but this does not affect the operation of the sundial.



But what is the significance of G in all these drawings?

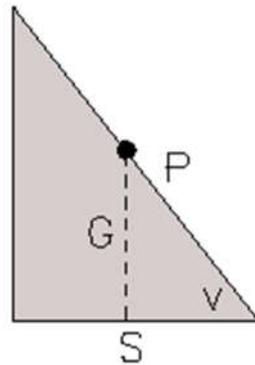
A pole style can only be used to read solar time, possibly corrected for longitude.

For other time systems, such as Babylonian or ancient hours, or for date lines, the shadow of a single identifiable point is required.

That point may be the tip of the style triangle, or an index somewhere along the pole style, such as in the drawing below.

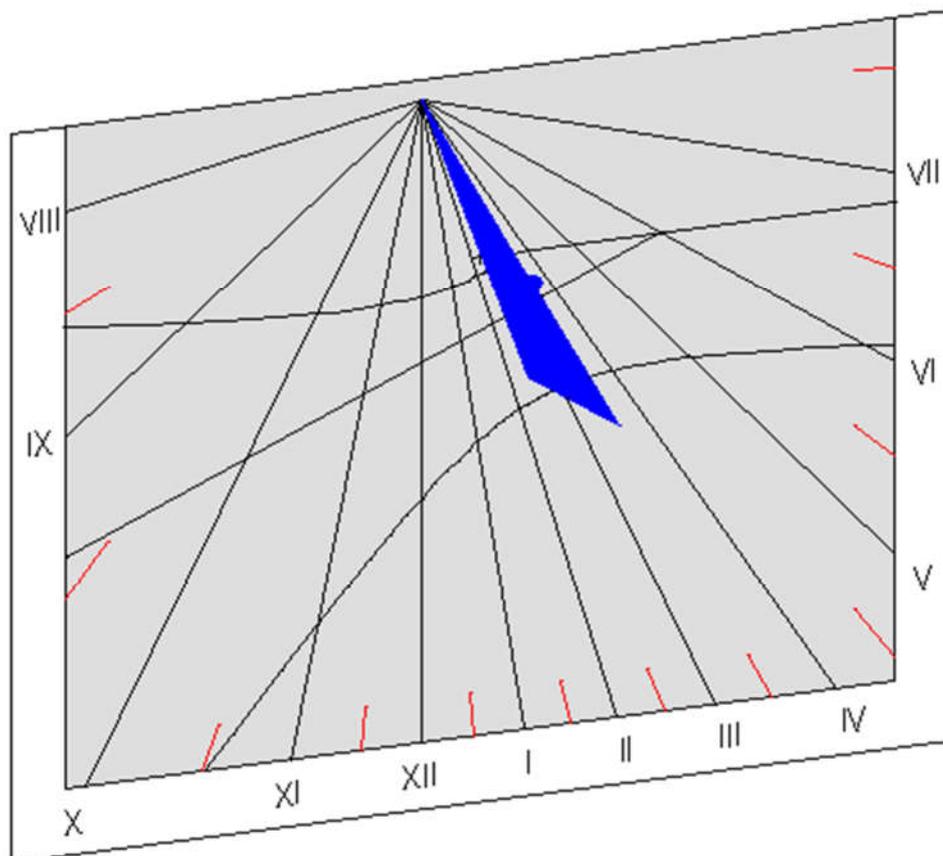
The perpendicular distance of that single point to the sundial face is called gnomon, marked G in all drawings.

Like a pole style, a gnomon therefore need not always be physically present.

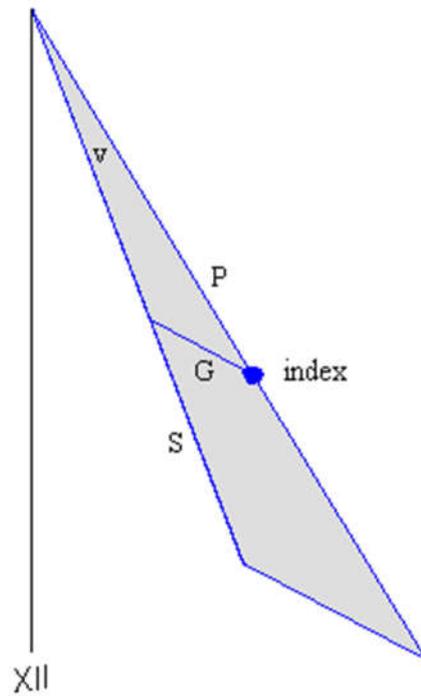


The drawing below shows a west declining vertical sundial for 52 degrees north latitude. The style triangle, shown in blue, is not vertical.

The style triangle has an index for the date lines on the sundial.



A separate drawing shows the style triangle again with its components marked P, S, G and v.



Note:

In English, gnomon is frequently used for the complete shadow caster. This is, unfortunately, no longer in line with antique terminology where gnomon meant a rod, of which the shadow of the tip was used.

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English translation: RH