Recording a dial's declination

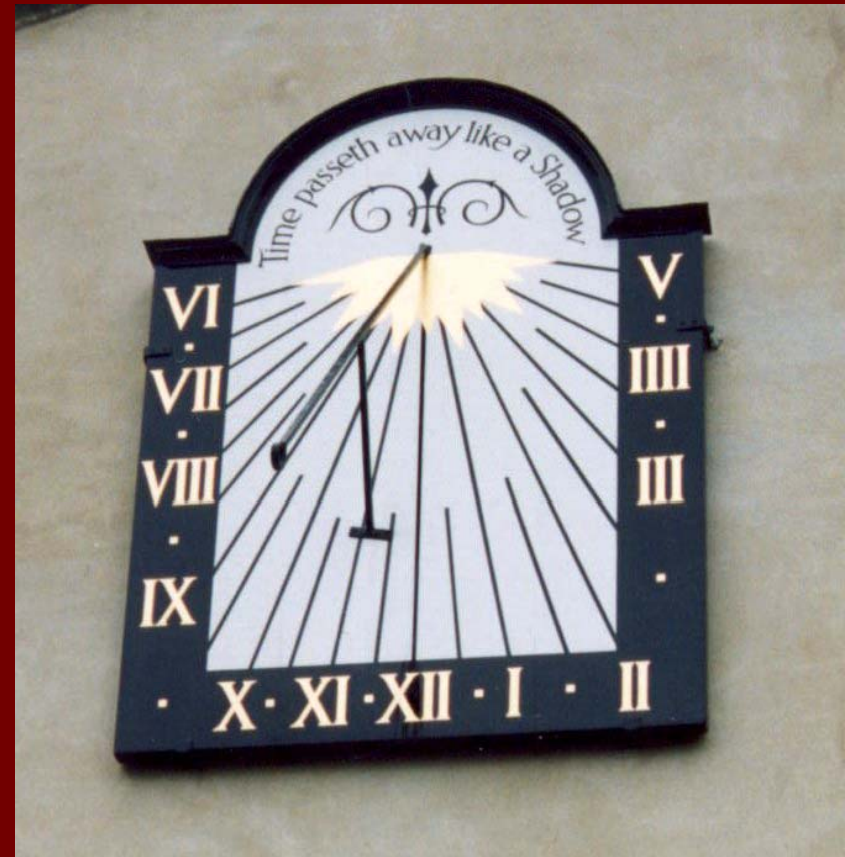## An easy approach to estimating the declination of a declining vertical dial

The problem

You are recording a vertical declining dial, you can photograph it and can describe it.

But what is the dial's declination?

A number of recorders omit this information and leave it to the Registrar!

What help is available?

SRN 0312 St Mary's Church East Bergholt

David's Table

In 1999 David Young wrote an interesting Bulletin article* that pointed out that you can use the time to which the gnomon points as a way of making a rough estimate of dial declination.

He showed a table based on a Latitude of 52°N. Choosing the column for either an East or West decliner and interpolating between the most appropriate time (given in his article in decimal hours) one can make an estimate of dial declination.

So, the East Bergholt dial, where the gnomon points to 11:10am (ie 11.17hrs), clearly declines about 10° East.

*BSS Bull **11(ii)**, 96-97 (1999)

DEC	SUB-STYLE DISTANCE	EAST SS TIME	WEST SS TIME
05	4	11.6	12.4
10	8	11.2	12.8
15	11.5	10.7	1.3
20	15	10.3	1.7
25	18	10.0	2.0
30	21.5	9.6	2.4
35	24	9.2	2.8
40	27	8.9	3.1
45	29	8.5	3.5
50	31	8.2	3.8
55	32.5	7.9	4.1
60	34	7.6	4.4
65	35	7.3	4.7
70	36	7.1	4.9
75	37	6.8	5.2
80	37.5	6.5	5.5

Another approach

Such a table is useable close to its design latitude and is increasingly approximate if much interpolation is needed.

When checking lots of dials something easier is clearly needed.

The equations involved are not 'analytic' – they are 'transcendental' – ie they calculate only in one direction, hence the rather unusual times and numbers in David's table.

For nearly ten years now I have used a somewhat different approach.

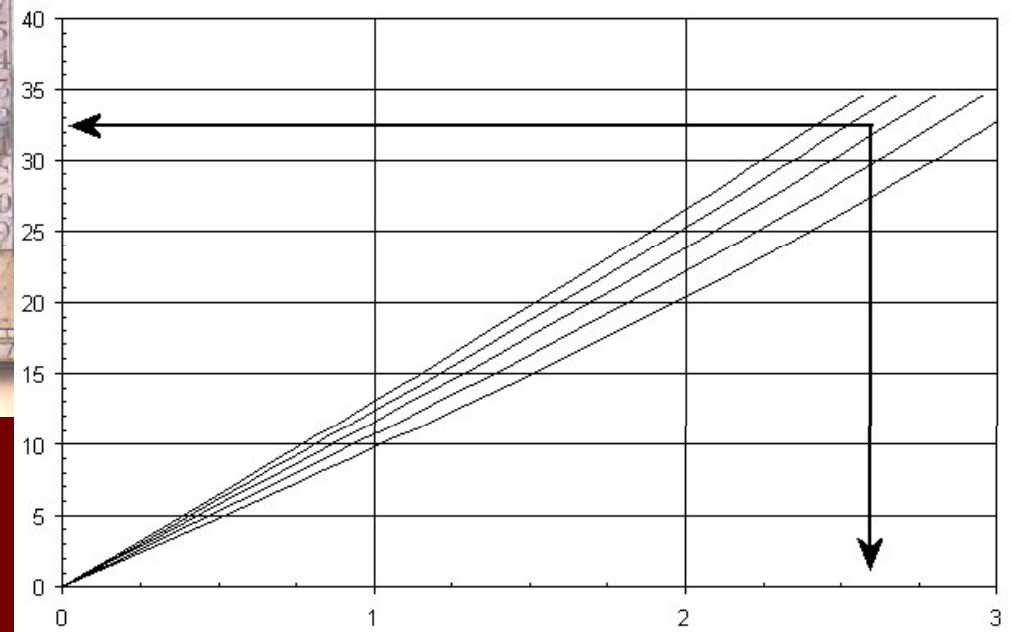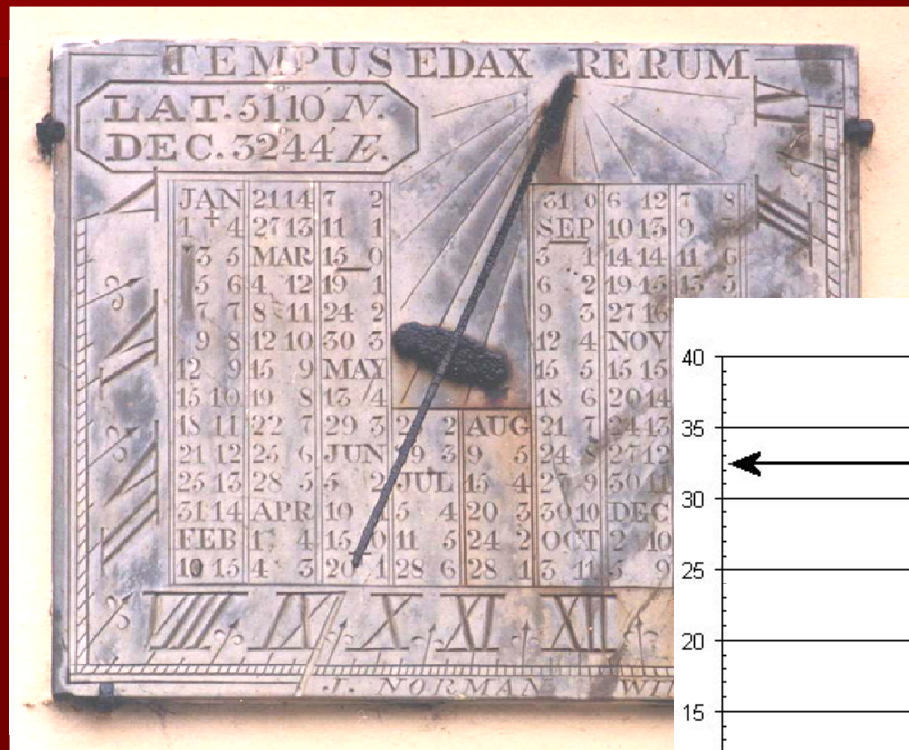*A graph based on time from noon rather than absolute time*

A graphical approach

Declination Calculator

A Check...

SRN 0051 Tea Rooms at Wheddon Cross
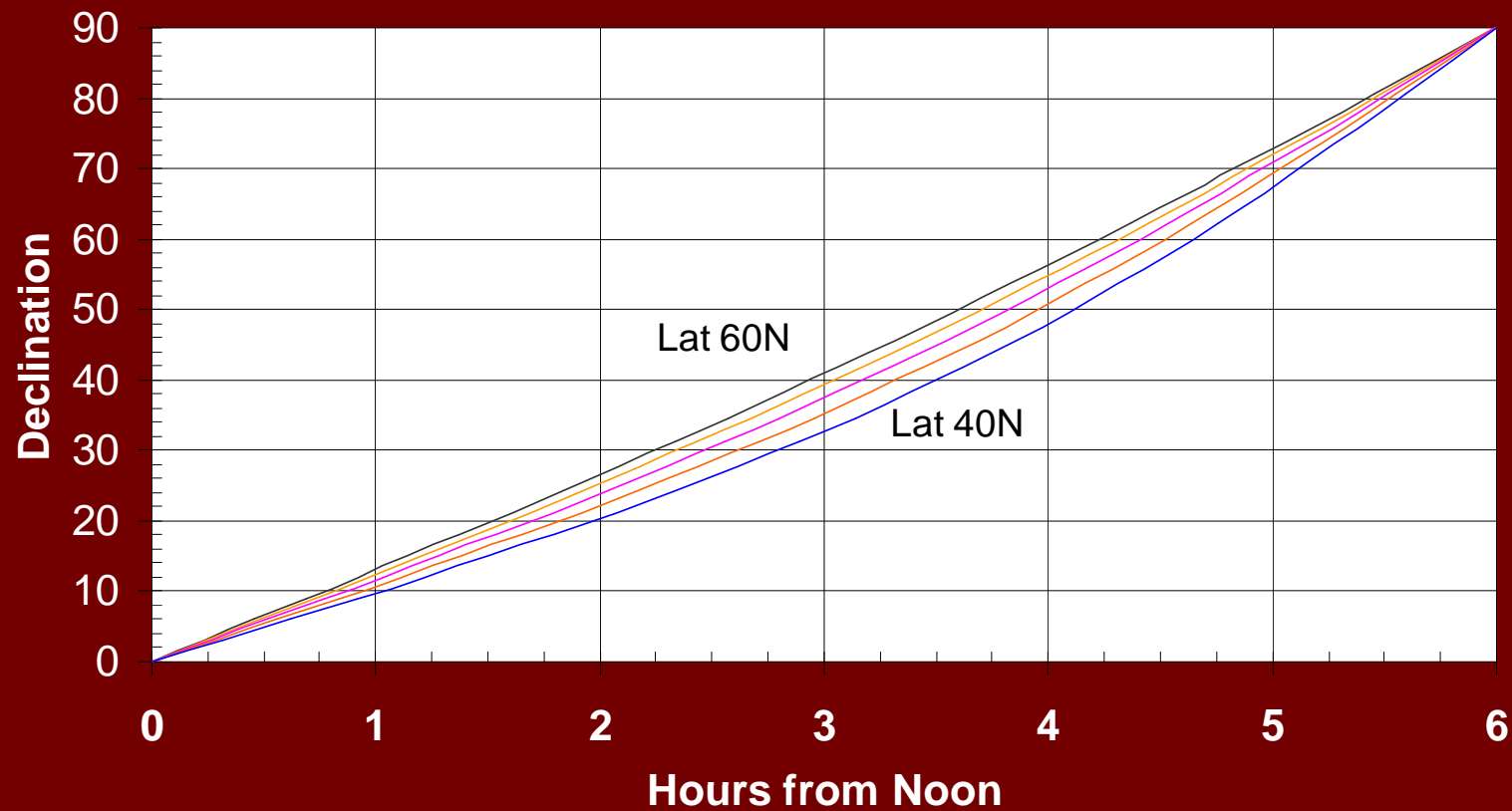
A Check…

But…

Sometimes, as here, one has to guess the 'time' of the sub-style line!
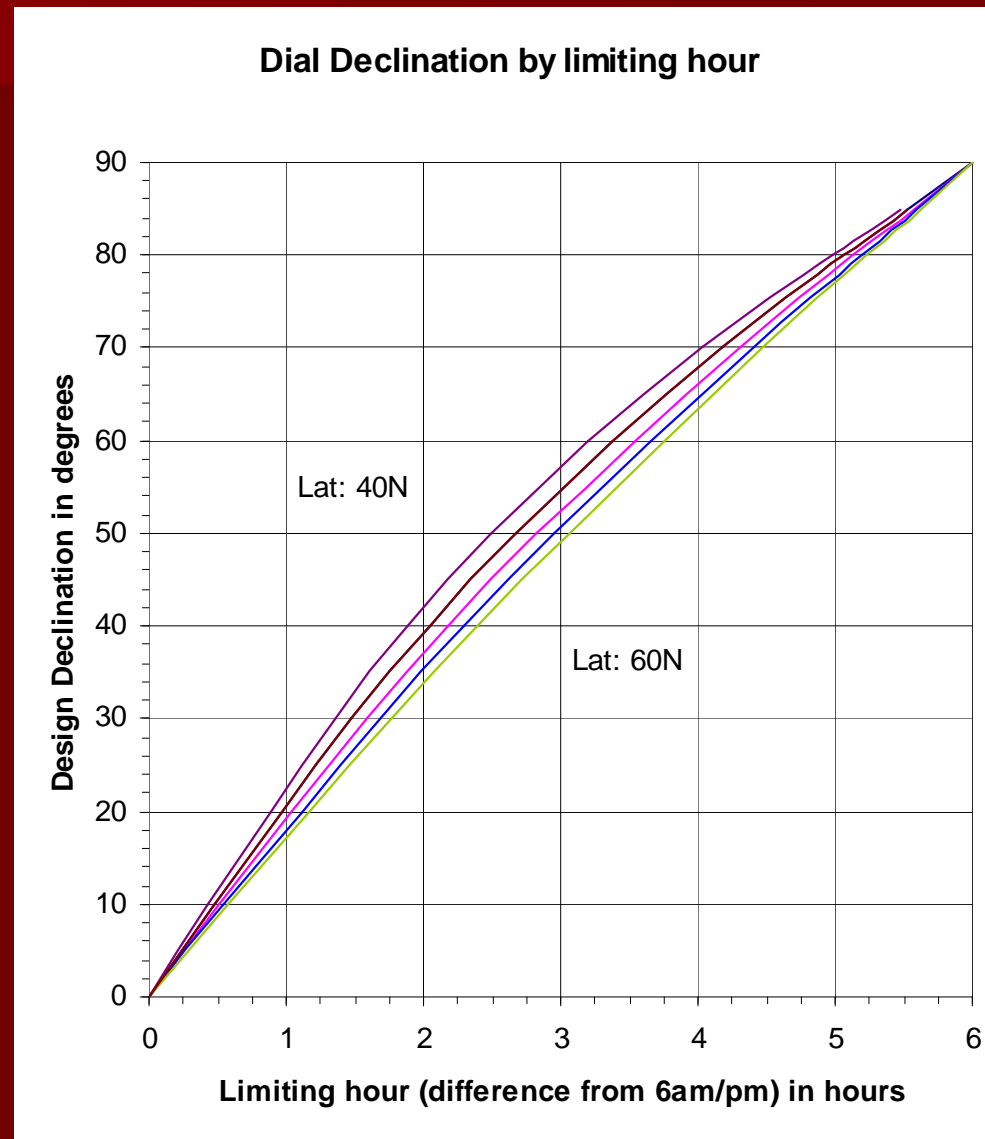
However in a few cases, as with this Oxford dial, the time scale goes right to the horizon line.

With a little extra complication we can devise a different graphical approach using the limiting hours.

SRN 0988 Brasenose College Oxford

Another graphical approach

Dial Declination by limiting hour

Declination by limiting hours