

The Orientation of the Minster By George Andison, recorded July 2015 from his earlier talk

The orientation of the Minster is from 10° South of East to 10° North of West. Peter Latham, then Chief Steward, wondered if this was because magnetic compass North and geographic true North are not the same - the magnetic North Pole changes position year by year.

But this cannot be the reason for the Minster's orientation. A form of compass appeared in the 12th century - a magnetised needle stuck into a straw and floating on a bowl of water. The early engravings showing masons always include their three principle tools, dividers, setsquare and plumb-line. If they had had a compass I am sure that would have been included.

The question raised in my mind was why are nearly all Abbeys and large churches built on an East to West line. The only answer that made sense to me lay in the fact that most of the earliest large churches were built by monks, whose daily routine involved early rising for worship and prayer. A building with a large window in a wall facing the rising sun would aid their reading and chanting. The High Altar below a large East window is the norm in most of our large churches. There are notable exceptions to the East-West orientation - for example, St. Peters in Rome and Westminster R.C. Cathedral in London.

My next step was to check the orientation of as many large churches as I could, using the town plans, cathedral guides etc. I was able to record the variation from E-W for 60 churches. The range of variation was 25° North of East to 28° South of East. To match the orientation to a date in the year when the sun rises at a particular church, there is a simple formula. The sun rises due East twice a year at the spring and autumn equinoxes. Using the mid-latitude of 53° N for all calculations, the sun rises 41.5° N of E on 21st June, which gives a move of 1° every 2.25 days. This enabled me to give a date for sunrise for each variation of E-W orientation of the 60 churches.

There are of course 2 dates, one as the sun moves north and one as it returns southward - which to choose?

At this point, Peter gave me a British Museum publication "Masons and Sculptors". The answer was to be found in this quotation "In theory building is a seasonal activity, ceasing from Michaelmas (29th September) to Easter and often in practice from All Saints (1st November) to the purification of the B.V.M.(2nd February)". Work to lay out the line of a new building was unlikely to be towards the end of a working year.

At this point, I should point out that I excluded all buildings later than the 16th Century,

when compass assistance was more readily available. I also exclude an idea put forward, that the sunrise on the Saints day relevant to a church could have been used; not all churches have such dedication, some were dedicated at a later date and some had changed. Of those I could identify there were no clear correlations of possible start dates.

So, returning to dates of sunrise, I found:

4 starts in early February – all South of East

7 early to mid-March – all S of E

20 mid to end-March, of which 12 were E-W, 6 S of E, 4 N of E

11 early to mid April, of which 10 were N of E & 1 E-W

8 mid to end April, all N of E

8 in May, all N of E

Factors that make use of a fixed date unreliable are possible cloud conditions and hills or trees between the building site and the true horizon. Assuming then the availability of labour and light from sunrise, I like to imagine that whoever determined the foundations of our Minster set out one morning on or around the 8th March and laid down markers in a line towards the rising Sun.

Second thoughts:

Since writing this summary of my ideas of some 20 years ago, I have come across a new possible answer to the question. “Why East-West, a visual guide to the new testament” by Jonathon Reed, explores what archaeology reveals about the first Christians. The oldest Christian Church discovered in good condition is at Dura-Europas on the Euphrates river. It had earlier been a large house. Two of the rooms on the south side of the house had been turned into one large enough to hold about 70 people. A small platform had been built on the shorter eastern side. This meant that people faced the rising sun and this arrangement was common in temples to Mithras. Another room in a corner of the house had been turned into a Baptistry.

Could it be that the early Christians of the second century were thinking of the story of the Magi – “We saw his star in the East and have come to worship him”?

Further thoughts on the question of ‘Why East-West orientation of Major Christian Churches’ come from Richard Stamp’s book “The Secret Languages of Churches and Cathedrals”. Writing about the early church buildings, he gives the classical temple as a model. They were orientated so that the rising sun would enter through a door at the east and illuminate a statue of the God within. Although not all early churches were orientated when they were built, the altar was at the east end so that the congregation faced the rising sun. – a symbol of the Resurrection and the Light of God.

I leave these thoughts with you.