

BELLRINGING FOR THE MAZE FESTIVAL

The bells of Saffron Walden Parish Church will be rung by members of the Saffron Walden Society of Change Ringers, who will attempt a quarter-peal in the late afternoon of 28th August to mark the Maze Festival. But what is a quarter-peal, and how is it related to mazes?

To answer the last question first, the link to mazes is pretty tenuous and a little contrived.

When bells are hung for 'full-circle' ringing, as in England, it is not possible to 'play' conventional tunes by following dots on a musical stave. Rather the way bell 'music', known as 'methods', is written down and learned by ringers is somewhat maze-like (strictly speaking, it is more like a labyrinth; no doubt the difference is explained elsewhere on the Maze Festival website!).

The bells are given numbers, starting with the smallest bell which has the highest musical pitch (known as the 'treble') as number 1, and continuing to the largest, lowest pitched bell, (number 6 here, and known as the 'tenor'). To start with, the bells are rung "in rounds" descending the musical scale, so this is written, for six bells, as:-

123456
123456
123456 etc.

Thus, the ringer of bell number 3 knows they should always ring after bell number 2. In order to ring a method, the bells are rung in a different sequence on successive pulls of the rope, known as a 'change'. A very simple change would be to swap each pair of bells:-

123456
214365

If we simply swap the same pairs again, we are back where we started. So what we could do is have the first and last bells stay in the same position, and the remaining pairs swap; in the next change all the pairs swap, and in the next change the first and last bells stay in position again, and so on:-

123456
214365
241635
426153
462513
645231
654321
563412
536142
351624
315264
132546
123456

And now we are back where we started, 123456. This method is called Plain Hunt Minor.

But I am sure you have realised that there are lots of sequences one can ring on six bells. In fact there are 720 (factorial 6, or $1 \times 2 \times 3 \times 4 \times 5 \times 6 = 720$).

One way to ring a few more of them is the change which bells stay in place when the treble returns to being the first bell, known as 'leading'. If we make the treble and *second* bells stay in place, and swap the remaining pairs before continuing as before, we start a new sequence.

This ought to be written down as a continuous column, but to save space a new column is started each time the treble leads. For clarity (to ringers, anyway!), a line is drawn under the last row of the column, and the first row of the next column is added:-

Plain Bob Minor

1 2 3 4 5 6	1 3 5 2 6 4	1 5 6 3 4 2	1 6 4 5 2 3	1 4 2 6 3 5
2 1 4 3 6 5	3 1 2 5 4 6	5 1 3 6 2 4	6 1 5 4 3 2	4 1 6 2 5 3
2 4 1 6 3 5	3 2 1 4 5 6	5 3 1 2 6 4	6 5 1 3 4 2	4 6 1 5 2 3
4 2 6 1 5 3	2 3 4 1 6 5	3 5 2 1 4 6	5 6 3 1 2 4	6 4 5 1 3 2
4 6 2 5 1 3	2 4 3 6 1 5	3 2 5 4 1 6	5 3 6 2 1 4	6 5 4 3 1 2
6 4 5 2 3 1	4 2 6 3 5 1	2 3 4 5 6 1	3 5 2 6 4 1	5 6 3 4 2 1
6 5 4 3 2 1	4 6 2 5 3 1	2 4 3 6 5 1	3 2 5 4 6 1	5 3 6 2 4 1
5 6 3 4 1 2	6 4 5 2 1 3	4 2 6 3 1 5	2 3 4 5 1 6	3 5 2 6 1 4
5 3 6 1 4 2	6 5 4 1 2 3	4 6 2 1 3 5	2 4 3 1 5 6	3 2 5 1 6 4
3 5 1 6 2 4	5 6 1 4 3 2	6 4 1 2 5 3	4 2 1 3 6 5	2 3 1 5 4 6
3 1 5 2 6 4	5 1 6 3 4 2	6 1 4 5 2 3	4 1 2 6 3 5	2 1 3 4 5 6
1 3 2 5 4 6	1 5 3 6 2 4	1 6 5 4 3 2	1 4 6 2 5 3	1 2 4 3 6 5
1 3 5 2 6 4	1 5 6 3 4 2	1 6 4 5 2 3	1 4 2 6 3 5	1 2 3 4 5 6

...back where we started!

This method is called Plain Bob Minor, and is 60 changes long. This takes about 3 minutes to ring.

Obviously, remembering the order in which to ring your bell rapidly gets very complicated, and this is where the tenuous link to mazes comes in. If we repeat Plain Bob Minor, but draw a line through two of the bells, pathways through the maze of numbers are highlighted:-

Plain Bob Minor

1 2 3 4 5 6	1 3 5 2 6 4	1 5 6 3 4 2	1 6 4 5 2 3	1 4 2 6 3 5
2 1 4 3 6 5	3 1 2 5 4 6	5 1 3 6 2 4	6 1 5 4 3 2	4 1 6 2 5 3
2 4 1 6 3 5	3 2 1 4 5 6	5 3 1 2 6 4	6 5 1 3 4 2	4 6 1 5 2 3
4 2 6 1 5 3	2 3 4 1 6 5	3 5 2 1 4 6	5 6 3 1 2 4	6 4 5 1 3 2
4 6 2 5 1 3	2 4 3 6 1 5	3 2 5 4 1 6	5 3 6 2 1 4	6 5 4 3 1 2
6 4 5 2 3 1	4 2 6 3 5 1	2 3 4 5 6 1	3 5 2 6 4 1	5 6 3 4 2 1
6 5 4 3 2 1	4 6 2 5 3 1	2 4 3 6 5 1	3 2 5 4 6 1	5 3 6 2 4 1
5 6 3 4 1 2	6 4 5 2 1 3	4 2 6 3 1 5	2 3 4 5 1 6	3 5 2 6 1 4
5 3 6 1 4 2	6 5 4 1 2 3	4 6 2 1 3 5	2 4 3 1 5 6	3 2 5 1 6 4
3 5 1 6 2 4	5 6 1 4 3 2	6 4 1 2 5 3	4 2 1 3 6 5	2 3 1 5 4 6
3 1 5 2 6 4	5 1 6 3 4 2	6 1 4 5 2 3	4 1 2 6 3 5	2 1 3 4 5 6
1 3 2 5 4 6	1 5 3 6 2 4	1 6 5 4 3 2	1 4 6 2 5 3	1 2 4 3 6 5
1 3 5 2 6 4	1 5 6 3 4 2	1 6 4 5 2 3	1 4 2 6 3 5	1 2 3 4 5 6

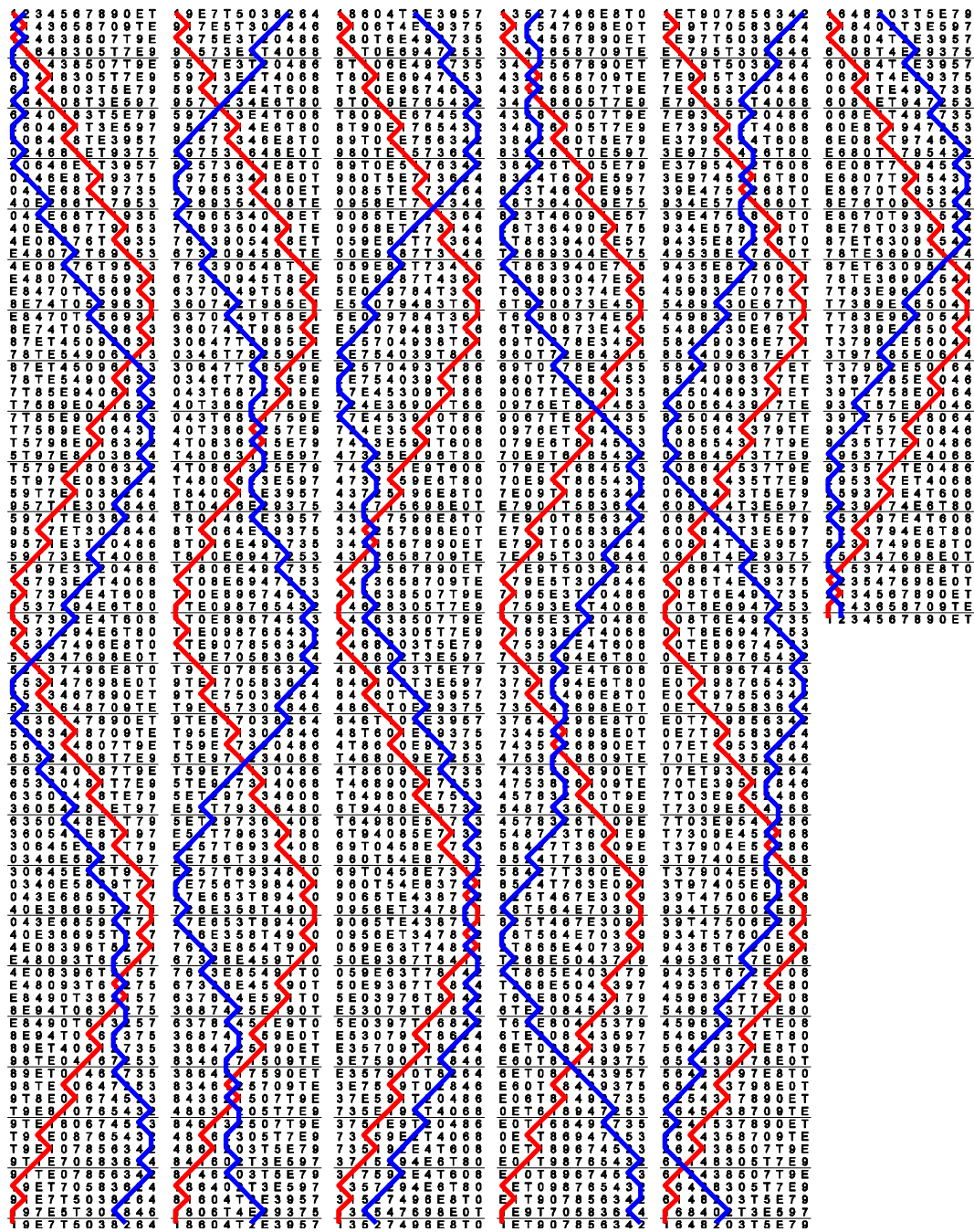
Traditionally, the treble's path is marked in red and is usually simpler than the other bells – it forms the framework on which the method is built. The line for other bells is usually in blue.

If you trace the blue line for bell 6, then shift the tracing paper sideways to the next column, you will see it lines up with bell 4. This is because each bell follows the same path, but starts and ends at a different point. Try to imagine the blue line, but without the numbers, as a winding, continuous circular path; each bell starts on the path at a different point and makes one circuit to get back to where it started.

So a ringer only needs to 'learn the blue line', and the point on it that each bell starts. 'Ringing the blue line' is like following the correct path through a maze or labyrinth; get it right and you reach the end. Get it wrong and you quickly get lost!

Of course, the more bells you have (Saffron Walden has 12), the more complicated it can get. And there are clearly lots and lots of ways of changing the bells on successive lines. Below is a method on six bells called London Surprise Minor:-

Cambridge Surprise Maximus



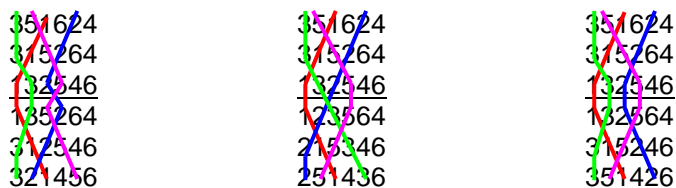
In this example, as there are so many more numbers, and they are printed small (*and* there are two 'leads' per column) to keep the page down to a reasonable size, the pattern of the red and blue lines becomes dominant. Learning the blue path through the maze of numbers is really the only way to learn the method.

Ringers 'learn the blue line' in lots of different ways, but some imagine actually travelling along the blue line through all the numbers. It's a bit like memorising a complicated journey through the streets of a city, using a map. You can learn the route, and various helpful landmarks along it, but you don't need to know the name of every road at every junction.

And so what is a quarter-peal?

A method can also be made longer by the Conductor of the band of ringers, who is actually ringing one of the bells himself. Sometimes when the treble leads, the Conductor calls "Bob" or

“Single”. This tells the other ringers to apply a different rule for which bells remain in place. In Plain Bob Minor they look like this:-



No call made

Bob

Single

Each bell then continues on the usual path, but has moved to a new starting place. Adding other coloured lines should make this clearer. By putting in Bobs and Singles in the right places, the method can be extended.

A full peal is at least 5,040 changes, and takes over three hours to ring. A quarter-peal is (obviously!) a quarter of that; around 1,260 changes, and takes 40 to 50 minutes to ring. Even that is a quite a feat until you get experienced.

If you are interested in Saffron Walden’s bells or bell ringers, have a look at our website, www.saffronwaldenbells.org.uk; there is a link elsewhere on the Maze Festival site. This contains links to related sites, including more information on method ringing.

If you would like to see the bells being rung, you’ll need to make arrangements with the Society’s Ringing Master or Secretary, as the ringing chamber in the tower isn’t big enough to accommodate a lot of unannounced visitors.

Or if you can wait until December, the tower should be open to visitors during the Church’s Christmas Fair. You may also have the opportunity to try ringing a bell!