Landbeach Bell Ringers Worksheet 4 - Methods

From Worksheet 3

Worksheet 3 asked you if it matters what order you call called changes in? The answer is: some of them, yes and some of them, no. For example, you can get between Rounds and Queens by swapping pairs of adjacent bells like this:

Rounds: 1 2 3 4 5 6 7 8
2 to 3, 4 to 5, 6 to 7; 2 to 5, 4 to 7; 2 to 7
Queens : 1 3 5 7 2 4 6 8

The first three changes: *2 to 3, 4 to 5, 6 to 7*, all affect distinct pairs of bells, so you can call them in any order. The next change: *2 to 5*, can't be called until the first two changes: *2 to 3 and 4 to 5*, have been called. Do you understand why? But you could call 2 to 5 before 6 to 7, if you liked. As we said before, there are lots of different ways of doing the same thing.

Methods

Oh dear! How can I tell which way is the best, and how can I remember what I did last time?

Thinks: There must be some method in it!

Answers: Yes, there is!

A method is, as the name suggests, a methodical, ordered way of ringing lots of different changes.

Each method has a name: for example, Plain Hunt Minor, Stedman Doubles.

Each method consists of a specified set of changes, in a specified order, with no repetition.

Before ringing a method, you must learn the set of changes it includes ("learn the method").

Once all the ringers have agreed what method they are going to ring, they catch hold and ring it.

They make a change at every stroke, both hand and back, without anyone telling them to.

The simplest possible method, Plain Hunt on 3:

1 2 3 (This is not part of the method; this is the band ringing Rounds before the method starts)
2 1 3 (The first row of the method.)
2 3 1
3 2 1
3 1 2
1 3 2
1 2 3 (The last row of the method. Then the band go on ringing Rounds)

This may have been the first method invented, although no-one is quite sure.

Question: How many different rows are there in Plain Hunt on 3?
Question: What is the maximum number of different rows possible on 3 bells?
Exercise: Write out Plain Hunt on 3 as call changes. What is novel about these call changes?