

Music of the bells

The Festival includes two change ringing performances (at the end of the service at All Saints and before the service at St Paul's). Change ringing music is very different from conventional choral or orchestral music because it is performed on a special, and rather unusual instrument. These notes explain some of the characteristics of ringing music, and of the two performances in the Festival.

The instrument

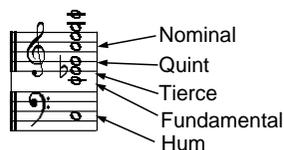
All Saints and St Paul's each have a ring of eight bells, ranging in weight from ¼ to ¾ ton. Each bell swings full circle (mouth-up to mouth-up), controlled by the ringer many feet below on the end of the bellrope (see illustrations over the page). Each swing takes about two seconds and there is a delay of over a second between the action on the rope and the resultant sound.

With eight bells there are eight ringers, each of them responsible for the sound of one bell. If that sounds easy, bear in mind that to achieve the proper rhythm the bells need to be swung to a precision of a few hundredths of a second. The essence of change ringing is that the order in which the bells sound continually changes, requiring continual small, accurate changes in the speed at which each bell swings. This is achieved by making it swing slightly higher (slower) or less high (quicker).

The sound

A ring of bells is tuned to a diatonic scale. All Saints bells are in the key of E and St Paul's bells are in the key of F. Ringers use numbers rather than notes to simplify things, so in either tower the bell with the highest note is numbered 1 and the bell with the lowest note is numbered 8.

A tower bell vibrates in several different modes at once to produce a rich sound with extended resonance so the sounds blend into each other. The sound is further enriched by a slow vibrato as the Doppler effect slightly changes the pitch that you hear as the bell swings towards or away from you. The diagram shows the main partials for a bell in C.



Bell music

The physical constraints limit what is possible with swinging bells, so bell music is very different from conventional music. Each swing takes about two seconds, and although the timing can be varied, it can't be varied a lot. So every bell sounds once in each 'row' (a bit like a bar on conventional music) and although the order changes continually, no bell moves more than one place (later or earlier) between successive rows. This constraint also provides coherence to the sound, which the brain can sense even though the sequences of notes may not seem to have an obvious pattern.

Much of the ringing has alternating high and low notes, but periodically a characteristic pattern emerges – typically a run of several notes up or down the scale. It then dissolves and recurs again later. The familiar patterns are called 'roll ups', and the effect is a bit like a leitmotif in conventional music.

Methods & compositions

Ringers ring 'methods' not tunes. A method is a set of rules for generating a sequence of rows that will return to the original row, typically after a hundred or so changes. The ringers learn the method so that they can follow the path of their bell through it. Longer compositions are formed by adding 'calls' (different changes) at specific points during the ringing, each of which has the effect of switching the ringing onto a new track. The same rules apply after the switch, but starting from a different point. The composition is designed to extend the performance to the desired length without repeating any row.

Performances

Routine performances typically last 5-10 minutes but longer performances are rung for special occasions. The gold standard ringing performance is a 'peal', which normally takes around three hours. The two performances in the Festival are 'quarter peals', which take under an hour each to perform. Every sequence of notes (every bar in conventional terms) is different, so no row is repeated during the whole performance.

The performers

Ringers need a good sense of rhythm, to feel the rhythmic movement of the bell and predict what it will do. They need a feel for the speed of swing and the physical action needed to make the bell ring one place earlier or later in the sequence – a bit like knowing how hard to throw a ball to land it in the right place. They need well developed listening to determine whether their bell is striking accurately, and they need to work out what to do next. There are no scores – everything is performed from memory. They don't need to be particularly strong – ringing is about timing, rhythm and finesse, not brute force.

The Festival performances

Both performances use relatively simple methods with regular construction. The regularity provides a lot of musical sequences without the need for a complicated composition.

Grandsire Triples (1260 changes) at All Saints – 'Triples' means that 7 bells (1-7) ring the changes, while bell 8 (the lowest note) rings last in every row. That provides a regularity to the music – in musical terms, it's like each eight beat bar ending with the tonic.

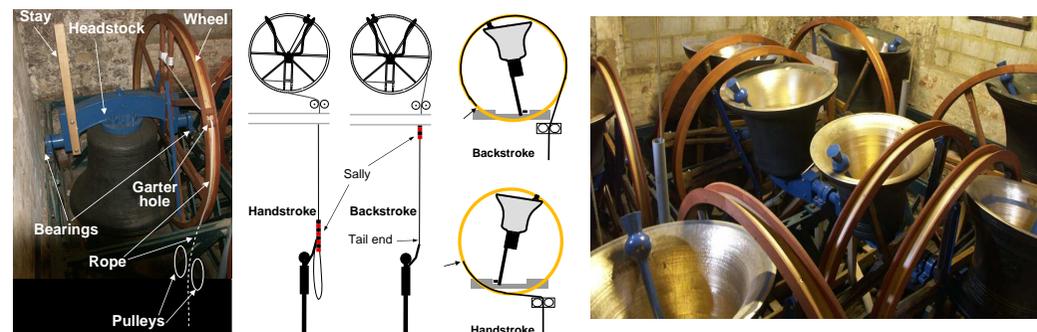
The performance uses a six-part composition with bells 5, 6, 7 returning to their home positions in every part, which gives periodic runs of four notes down the scale (5678). Many more runs of three notes (678) occur regularly throughout the performance. A short period of 'rounds' (downward scales) at the start, allows the rhythm to settle, and then the main performance begins, lasting for 45 - 50 minutes.

Plain Bob Major (1264 changes) at St Paul's – 'Major' means that 8 bells ring the changes. Having all 8 bells changing places gives a more dynamic sound. There is no longer a comforting tonic note at the end of every 'bar' but the music still has a natural pulse because at the end of every other row there is a slight pause (like having an extra beat rest at the end of every other bar).

The composition is in one part and includes two blocks (well over half the total performance) that contain many 4-note runs both up and down the scale. There are rows ending 5678 or 6578 and rows beginning 8765 or 8756. The duration (45 - 50 minutes) can't be exactly predicted, so the performance is timed to finish well before the start of the service, with the remaining time taken up by a shorter piece of ringing that can be adjusted to fit the available time (a bit like an organ voluntary).

Notes by John Harrison

How bells work



Mechanics of a bell hung for full-circle ringing

Bells mouth-up, ready for ringing

Find out more

Information about change ringing on All Saints tower website: allsaintswokinghambells.org.uk

Information about the music of change ringing at: jaharrison.me.uk/Ringing/Music

Tower contacts: wokingham.allsaints@sdb.odg.org.uk wokingham.stpaul@sdb.odg.org.uk