Learning with Simulators.

Why have Simulators?

Traditionally, learning to ring has been a slow process. It is suggested that this has come about, at least in part, because of the limited time allocated to learners on typical practice nights. This, in turn, can be due to two factors, firstly the requirements of other members of the band, secondly practice time is limited due to noise considerations.

Nothing can take the place of ringing on open bells but there is a limit to the tolerance of the public when we practice. The simulator offers a means of extending practice times by having training sessions that are inaudible to the outside world whilst maintaining a reasonable degree of realism within the ringing chamber. There is no thought here of replacing the traditional practice night (or other open ringing) but rather supplementing it to enable longer or more frequent practices to be held without causing annoyance. Using industrial training terms, simulator ringing can be 'sandwiched' with open ringing to bring learners to a basic level of competence sooner. A simulator can be used on training days for learners of any level of ability; it can also be used as a 'practice before the practice', enabling 'silent' training sessions for beginners before the practice proper commences.

Ringers of a more advanced level can 'ring' a silenced bell with the computer in simulator mode, to practice methods without restrictions which might otherwise imposed by the capabilities of a local band or by the number of bells in one's home tower. Additionally, such a program offers possibilities to learn methods on a PC at home. These features are further explained in the following notes.

With a ringing program designed to run on PC's it is not an expensive proposition to install a simulator because older PC's which cannot run modern office programs can be bought cheaply - or might even be donated to the tower. They will run programs such as ABEL just as well as a modern PC because their memory capacity and computing speed is ample for this task.

These notes are based on the ABEL program as it is the one in use at Braunston. For further information see abelsim.co.uk The original ABEL design requires the homebuilding of some electronic components; full instructions are given in the ABEL literature. An alternative is a ready-made kit available from David Bagley, www.ringing.demon.co.uk/

How does it work?

In the bell loft a sensor is fitted on the frame adjacent to each bell. The sensors send electrical impulses, at the moment each bell would have struck, to the computer in the ringing chamber. Here these impulses are translated into bell-like sounds delivered through a speaker.

It is necessary to bring one or more cables from the bells to the ringing floor; in many towers the clock weight shaft is an idea route.

Silent practice mode.

With all the clappers locked or tied; the bells are rung full circle and the computer sounds the appropriate notes when each bell would have struck. With a band of ringers rounds, call changes or any method may be practiced in the normal way. (Raising and lowering in peal with sound is only possible if David Bagley's interface has been added to the system.)

This traditional form of practice is now silent to the world outside and, like open ringing practices, requires a band of competent helpers to gain most benefit. However, as learners gain experience, more advanced lessons become possible with learners practicing individually.

Change ringing simulator mode.

In this mode the computer can be set to 'ring' rounds or a wide variety of methods on four to sixteen bells. The rows (of figures) are displayed on the screen in step with the sounds and learners not actually 'ringing' can follow the path of the 'blue line' bell to help learn a method. The program allows any bell to be used, leaving a gap in the ringing which is filled by 'ringing' a silenced bell to keep in time with the computer. **This is not easy at first**, even for rounds. Learners must keep time by listening, counting and developing a sense of rhythm; the skill thus acquired improves abilities in 'real' ringing.

This form of learning is essentially one-to-one tuition Because of this it is advisable to teach small groups; two or three persons at a time is ideal.

A useful application of the simulator mode is to teach learners to keep their place in rounds without having a full band present. To do this:

- Set the computer for rounds on six.
- With an experienced ringer on 2 keeping time and a learner on 3, the computer rings 1 1 - - 4 5 6. Ringers of 2 and 3 must ring to match the computer. Given that 2 keeps in time with the computer, the learner has a rope to follow, six bells to listen for, and can count places while ringing.

Other lessons in simulator mode can start with rounds and develop progressively :

- Set the computer to ring rounds on six.
- The learner rings 3 to rounds, fitting in with the other five bell sounds, counting and listening. (To vary the practice any other inside bell might be nominated.) The learner must count and listen for **their own** bell and ring with a sense of rhythm. (N.B. The normal rule of 'Your bells sounds as your hands come up past your face' still works.) For the next stage:
- The learner now rings treble and has to cope with open leads. Because the computer's striking is faultless (devastatingly so!) faults in any of these exercises are immediately apparent because no-one is 'giving way' to the learner. Next:
- Set the computer to ring (say) Grandsire doubles.
- The learner now rings cover bell. To keep a cover bell swinging to a steady rhythm is a most useful skill.

In preparation for change ringing, the speed of ringing rounds can be altered, making learners ring slower, as when hunting up, or faster, as when hunting down. This develops bell

control ready for plain hunt. When the speed of ringing has been set the computer controls the pace - it will never 'give way' to the learner!

Program the computer to ring Plain Bob or Grandsire doubles.

- Learners now have to plain hunt the silenced treble by counting places, listening, and developing rhythm. Not easy at first, but those who stick at it benefit. Ropesight in 'real' ringing becomes easier once learners appreciate the different rhythms of hunting up and hunting down. At a later stage the ability to keep to a rhythm if the striking gets rough is a great asset in keeping one's own place and, ultimately, all good striking is rhythmic. Most ringers (even experienced ones) trying this for the first time are surprised to find how much they hold up and pull in to keep in time.
- From here, learners can progress to ringing methods on the simulator according to their own development paths.
- Ringing the tenor to simulator exercises enables practice in controlling a heavy bell whether for covering, hunting or method.

Other features:

- ABEL can be adjusted to make a bell sound odd-struck.
- ABEL can give an evaluation of one's striking but beware - its standards are extremely high and the results can be devastating to morale!
- ABEL can be pre-set for many variations in styles of ringing, notably with or without covering tenor on five bells, open or close leads, tower bell or handbell tones, tower bell or handbell display and, as previously mentioned, speed of ringing.
- The calls of 'Go', 'Bob' and 'Single' are given, also 'That's all - Stand' as the bells come into rounds. Commands can be actuated from the keyboard or from a footswitch.
- Whether in the tower, or running the program on a PC at home, ABEL can be actuated in 'simulator' mode from the keyboard, mainly from the 'home' keys F and J. The selected bell is actuated by pressing the appropriate key or, if practising for handbells, both keys, one for each bell.
- For handbell enthusiasts, instructions are given for making dummy handbells for practising with ABEL.

Silencing the bells.

Currently we are using tyre silencers as described by Peter Gale in the "Ringing World".

Making the most of a simulator.

A suggested sequence of progressive exercises.

(Note: Silence outside of the tower is an advantage common to all the following exercises. Also, for exercises in 'Simulator' mode, the simulated striking is perfect, thus the only errors will be those of the pupils.)

Mode/Exercise	Simulator settings	Objective/Comment.
Silent practice.	Silent Practice	Any form of normal ringing practice, rounds, call changes, methods, can be practised without causing annoyance.
Rounds	Simulator (set for six bells).	With an experienced helper ringing 2 and a pupil ringing 3, the pupil has a rope to follow and all the bells to listen to. This enables ringing rounds to be taught without having a full band present.
Ringing by rhythm.	Simulator set for six bells. Pupil rings 3	Pupils are briefed that they will be ringing 3, to count places and to listen for **their** bell. (They will need help with the first few pulls to get in time.) Emphasise the rhythmic element.
	Pupil rings treble	Pupils are now ringing the leading bell and must time the open lead. Count and listen as before.
	Now set simulator for any doubles method.	Pupils now ring cover bell, counting and listening as before. These three exercises develop rhythm and listening skills.
	Still set on six bells, set ringing speed slower. Pupil rings treble.	Pupil is now ringing rounds, but at a much slower speed. This makes it essential to hold up on both strokes. This is good preparation for hunting up.
	Set computer to ring faster than rounds	Pupil now has to ring faster than normal. This is good preparation for hunting down.

Hunting by rhythm.	Program simulator to ring any plain hunt doubles method.	Pupil is briefed to 'Ring slower when hunting up, faster when hunting down, and count your places'. Ringing commences with the pupil ringing treble to rounds as before, then plain hunting by counting places and listening. This takes time and perseverance. It may help initially to stop the exercise when the treble reaches fifths place, and start again. When the pupil can hunt up then follow on with hunting down. (Even experienced ringers can be surprised by how much they hold up and pull in, when not watching other ropes.) This exercise prepares pupils for ringing at differing speeds and thus assists in acquiring ropesight when ringing with others.
Ringing method by rhythm.	Starting with Plain Bob Doubles, any method can be practised, from any bell **and on any number of bells**. (You are not limited by the number of bells in the Tower!)	Pupils acquire the rhythm of making places and dodging, and become confident that they know the Blue Line. Bobs and singles can be introduced. As skill is acquired, treble bob hunt can be introduced and thus treble bob methods.
Ringing heavy bells.	Starting with Plain Hunt on five or six bells, use a heavier bell as the practice bell, working up to using the tenor. Then follow on into methods and on higher numbers.	Pupils can be coached in heavy bell technique, working progress-ively to ring the tenor and to ring methods. In all these exercises, pupil errors will not influence 'other ringers' - the computer will never give way to the pupil!

These exercises have been practised using Abel.

Students' Hand-out Notes
Ringing by Rhythm

Course Objectives: To develop a sense of rhythm into ringing to improve striking.
To listen for your own bell.
To count places while ringing.

Exercise 1.
Balance your bell every stroke for ten whole pulls. This is to ensure that you have bell control.

Exercise 2.
The computer will ring rounds, leaving a space for 3. Your bell is '3'.
Ring your bell to fill the space. (Your tutor will help you.)
Count the bells as they sound, One-two-THREE- four-five-six. As you count THREE this is YOUR bell. You will find that your bell sounds as your hands move up past your face.
Adjust your pulling so that your bell sounds in the right place, no gap, no clash. Sense the RHYTHM when you get this right - it helps you to pull at the right time.

Exercise 3.
Now you are ringing the treble at lead; the computer will leave a space for you.
As you ring, count ONE-two-three-four-five-six and listen for ONE.
Notice the 'Open lead', the slight pause you must make at every handstroke to get the ringing sounding right. Count 'GAP' to fit in the open lead and keep listening to your striking,
1-2-3-4-5-6-**1**-2-3-4-5-6-GAP-**1**-2-3-4-5-6-1-2-3-4-5-6-GAP-**1**-2-3- - - - - -.

Exercise 4.
Now you are ringing a covering tenor, ringing last over five other bells. Your count now is One-two-three-four-five-SIX. At first the bells will be in rounds. When they go into changes keep the same count. Emphasise the count of SIX to keep your place - you are **counting places.**

Up till now in each exercise your bell has kept in the same place, but in change ringing you can be moving to a different place with each pull. Also, the rhythm varies:

Ring slower than rounds when you hunt up.
Ring faster than rounds when you hunt down

Exercise 5.
Now you are a plain hunt treble, hunting on five bells so, when 'Go' is called your next handstroke must be slower (hold up!). This takes you into seconds place. The following backstroke must also be slow (hold up!); you are now in thirds place. And so on into fourths place and fifths place. Some people find it difficult to hold up at backstroke - which is why we had Exercise 1.

Over:

As you are ringing, counting your places, from leading think:

ONE-two-three-four-five-six
ONE-two-three-four-five-six
One-TWO-three-four-five-six
One-two-THREE-four-five-six
One-two-three-FOUR-five-six
One-two-three-four-FIVE-six.

This may seem difficult at first but it become easier with practice. Knowing which place you are in is important at all stages of change ringing.

Develop the slower rhythm of hunting up

When you hunt up you come into fifths place on a backstroke. The next pull (handstroke) is also in fifths place so this is a little faster than hunting up. On the next pull (backstroke) you hunt down into fourths place so this has to be faster still. To ring faster pull your bell sooner and PULL LESS! (If you pull too hard you can't ring quickly.) Keep this faster pace into thirds place (handstroke), seconds place (backstroke) and LEAD! From the back count:

One-two-three-four FIVE-six
One-two-three-four-FIVE-six
One-two-three-FOUR-five-six
One-two-THREE-four-five-six
One-TWO-three-four-five-six
ONE-two-three-four-five-six
ONE-two-three-four-five-si**x**

Develop the faster rhythm of hunting down.

Some tips for hunting:

- To ring slower pull a **little** harder.
- To ring faster pull a **little** less.
- At lead, when 'Go' is called, pull the backstroke a little harder to be sure of holding up for seconds place.
- In fifths place pull less, ready to hunt down.
- In seconds place, before leading, pull a little harder to steady your bell for the open lead.

Always remember: All good ringing depends on a sense of rhythm!

N.B. These exercises can be continued into method according to individual ability.

Ringing by Rhythm

All good ringing is rhythmic. Good striking only happens when every member of the band has settled to the same rhythm.

Visual assistance (watching the other ropes) will only assist striking to a limited extent because of a number of possible variations:

- Your bell may be odd-struck; you have to ring slower at handstroke and quicker at backstroke (or maybe the other way round) to get even striking.
- You may be following an odd-struck bell; this will affect the visual signals you are getting from that bell.
- If you pull harder than necessary (especially on lighter bells) the bell will speed up and thus sound sooner. (Also, over-pulling makes for ragged striking; this has been discussed elsewhere.)
- The bell you are following may not be striking accurately.
- Visually, you must 'pull wider' over the bigger bells to make the striking sound right. Or, if you are ringing one of the bigger bells, you must visually 'pull close' to the smaller bells. (If you are ringing rhythmically this happens naturally.)

Always remember that:

WHAT YOU HEAR IS MORE IMPORTANT THAN WHAT YOU SEE!

So the important thing is to **LISTEN.** But how? How do you hear YOUR bell?

- Start by listening when others are ringing rounds. Count the bells as they sound,
  1-2-3-4-5-6-1-2-3-4-5-6GAP1-2-3-4-5-6-1-2-3-4-5-6GAP1-2-3- etc.
  Count to a rhythm and, if the striking is reasonable, each bell will sound as you count. Count GAP for the open lead. There should not be a gap at the backstroke lead. (Wide leads at backstroke is a common striking fault.)
- When you can count to rounds, count in the same way when changes are being rung. You are now 'Counting places'. Count rhythmically and see if the bells fit your counting.
- Next, when you ring rounds, count in the same way, emphasising the count of YOUR bell. If you are ringing the third, count ONE-TWO-**THREE**-FOUR-FIVE-SIX etc. (Don't forget the GAP each handstroke lead.) Now you should hear your own bell on the count of THREE - as your hands move up past your face. **THIS** is where you hear **YOUR** bell! Counting rhythmically, with practice, you can tell whether a clip or a gap s your fault or that of the bell striking next to you.

Work to a rhythm when ringing rounds. A useful exercise if you are ringing with good strikers is to face outwards so that you cannot see the other ropes. **Or, practice ringing rounds on a simulator;** the simulator is 100% accurate and will never 'give way' to you. This is a challenging exercise which makes you listen and count your place.

From here, learn to plain hunt and ring method by listening, counting places and developing rhythm. Not only does it benefit striking, it helps you keep your place when the ringing gets a bit ragged. It's a challenge - but so is all good ringing!

P.D.W.