

Objectives and Constraints

How often do you go home after ringing thinking 'that was a good practice' or 'the ringing wasn't very good tonight'? How much difference is required to make you think one rather than the other? What criteria do you use when making your assessment?

In order to measure the success of any activity, we need to have a clearly specified objective. What is the objective of a ringing session? How are practice nights different from Sundays? Most objectives become meaningful only when we also specify the constraints which affect our ability to pursue them. For example, a naïve objective would be '*to produce perfect ringing for the public to hear*'. In the absence of constraints, the obvious way to achieve this would be to use a record or simulator. This is not what we as ringers want, so we add the constraint '*live ringers must be used*'. A ruthless parish might now decide to employ the best ringers it could find, and insist that they ring rounds and nothing else. This is still not what we want, so we constrain our objective a bit more by specifying that the ringers shall not be paid, that they shall as far as possible be local, and that they shall be allowed to ring things which they find satisfying.

It is a well-known feature of optimisation problems that the addition of constraints will lead to a result which is less than satisfactory in terms of the objective. In order to make the solution acceptable we have to settle for less. What we mean by 'acceptable' and 'less' is the key question for those responsible for running ringing sessions.

The constraints given so far are so obvious that we wouldn't usually bother to specify them explicitly. But what about some others, some of which may sometimes be overlooked? For most bands, an obvious constraint is the band itself. We do not have unlimited resources. And this also introduces another important aspect – the time dimension. Not only do we want the best possible ringing now, but we should also have an eye on the future, and maintaining the viability of the band. We have all heard of good bands who did not want to lower their standards by having learners. But we don't know of any because they all died.

So far, the constraints have been fairly general. There will also be some relating to individuals. How many times should each person ring? What is the maximum number of consecutive times a person should not be ringing? I have found a useful concept here to be what I call a '*Prime Ring*', which is a touch rung specifically for a particular ringer or ringers to gain experience. Less experienced ringers will find that most of their rings are prime rings. More experienced ringers will spend quite a lot of time making up steady bands for them. In a six-bell tower with a 90 minute practice attended by 12-15 people, I have found that two prime rings per person with no one sitting out more than twice in a row is just achievable. The prime ring concept also gives us a way of distinguishing Sunday ringing from practice ringing: ideally on Sundays there should be no prime rings at all. Of course, there is interaction between the constraints. One way of giving less experienced ringers more secondary rings is to ring more doubles and less minor, so that there is a covering place to be used. For some ringers, calling call changes is a prime ring.

One of the most unavoidable constraints is the amount of time available. It is therefore important to use it efficiently. Time between touches should be minimised, and time lost through false starts should also be minimised by giving people advance notice of what they will be ringing the touch after next.

As with most problems, the end result is likely to involve a certain amount of compromise. It is very difficult to have truly objective criteria for assessment of results. The question I ask myself (and other people) is 'was the ringing as good as it could have been?'

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