Determining Method Types Demystified

Bell ringing methods are categorised by type, e.g. Plain methods denoted by 'Bob' in the title. The least obvious method distinction is between the various treble dodging methods, e.g. Treble Bob, Surprise and Delight, which all have the same treble path. This paper tries to demystify the distinctions through simple worked examples. The precise definitions are available at http://www.methods.org.uk/ccdecs.htm#decE, and are occasionally updated in light of new Central Council Decisions.

Note: A '*fixed bell*' is a bell that completes a lead in the same place that it started.

Principle

This category requires there to be no fixed bells, in other words all bells are '*working bells*'. E.g. Stedman, Erin and Original. As soon as there is a fixed bell the method is in the category of '*Hunters*'.

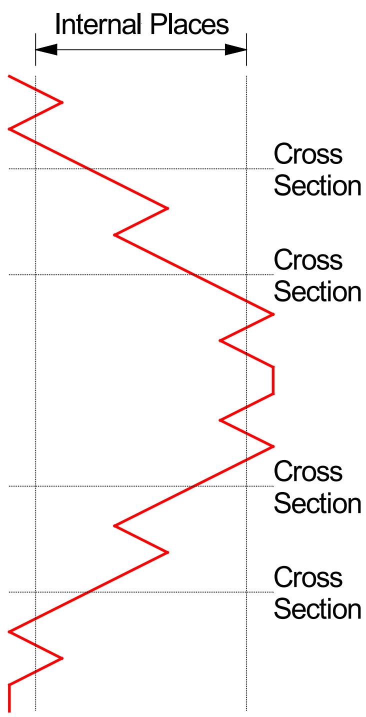
Plain

This category requires the treble to be a '*fixed bell*', repeating the same path every lead. The path must be symmetrical and pure hunting. E.g. Plain Bob Doubles and Minor, and Grandsire Doubles. Plain methods are further sub-divided into '*Bob*', '*Place*' and '*Slow Course*'. In 'Place' methods the working bells make places instead of dodging. In 'Slow Course' methods a second hunt bell with a symmetrical path makes 2$^{\text{nds}}$ over the treble at the lead end. Everything else is a 'Bob' method. There are additional tags that are frequently seen in plain methods, see below.

Cornwall Slow Course Doubles
12345
21435
24135
42315
43251
34251
32415
23145
21345
12435
12453

Treble Dodging

This category is sub-divided into three. In each case, the treble is the fixed bell and the path is symmetric, with the treble right dodging. The treble must dodge at least once in each position, and the same number of times in every position. In other words, Surprise methods are not limited to the treble single dodging in each position, it can double or even triple dodge too!



The following table describes the differences between the three method sub-types, but on its own it does require some further explanation.

Treble Bob	No internal places made at any cross sections.
Surprise	At least one internal place is made at every cross section.
Delight	At least one internal place is made at some cross sections.

'*Cross sections*' are where the treble moves from one dodging position, e.g. 3-4, to another, e.g. 5-6. An '*internal place*' is a place not at lead or lie, and it is these that are counted when determining the category. In the worked examples given, the areas highlighted in grey are the locations to look for places to be made. Theses are the *internal places* at *cross sections* where the treble moves from 1-2 to 3-4 and from 3-4 to 5-6, and the same in reverse for the second half of the lead. This excludes the transitions between 5-6 up and 5-6 down dodges, and the pair of 1-2 dodges, as the treble is not considered to be moving between dodging positions, but staying in the same position over a lead or lie. Hence there is no cross section at the half and full leads. The bells making the places that differentiate between the method types are in **bold** to make them stand out.

Treble Bob

Kent Treble Bob Minor	Pangalactic Gargle Blaster Treble Bob Minor
123456	123456
213465	213546
124356	125364
214365	215346
241635	251436
426153	524163
421635	251463
246153	524136
264513	542316
625431	452361
624513	543216
265431	542361
256341	453261
523614	452316
526341	543261
253614	453216
235164	435126
321546	341562
325164	435162
231546	341526
213456	314256
123465	134265
214356	312456
124365	132546
142635	135264

The definition is "*an internal place is **never** made by a working bell at a cross section.*" In Kent, the places are made when the treble is dodging in 1-2 away from the internal cross sections. The second example is included to show that the constraint on not making places at the internal cross sections does not mean Treble Bob methods necessarily have more hunting, which might have indicated they tend to be easier than Surprise or Delight methods.

Surprise

Cambridge Surprise Minor	London Surprise Minor
123456	123456
214365	213546
124635	125364
216453	215634
261435	251643
624153	526134
621435	521643
264153	256134
624513	526314
265431	562341
256413	653214
524631	635241
256431	365421
524613	356412
542631	534621
456213	543612
546123	453162
451632	541326
456123	543162
541632	451326
514623	415362
156432	145632
516342	416523
153624	146253
156342	142635

The definition is "*at least one internal place is **always** made by a working bell at a cross section.*" Although the Cambridge Surprise Minor example does include places in the external cross sections these are irrelevant. The London Surprise Minor example does illustrate these places are not required to meet the definition.

Delight

With apologies to those of that most noble profession!

Ringing Without An Accountant Is A Delight Minor	Zinc Delight Minor
123456	123456
214365	214365
124356	123465
213465	214356
231465	241536
324156	425163
321465	241563
234156	425136
243516	245316
425361	243561
423516	425316
245361	452361
425631	543261
246513	534216
245631	352461
426513	354216
462153	534126
641235	351462
642153	534162
461235	351426
416235	315246
142653	132564
412635	315264
146253	132546
164523	135264

The definition is "*at least one internal place is made by a working bell at* ***some*** *cross sections*." In the first example, only 4^{ths} is made, and only in two of the four possible opportunities. In the second example, only 3^{rds} is made in two of the four possible opportunities. Hence neither method meets the constraints required for Treble Bob or Surprise.

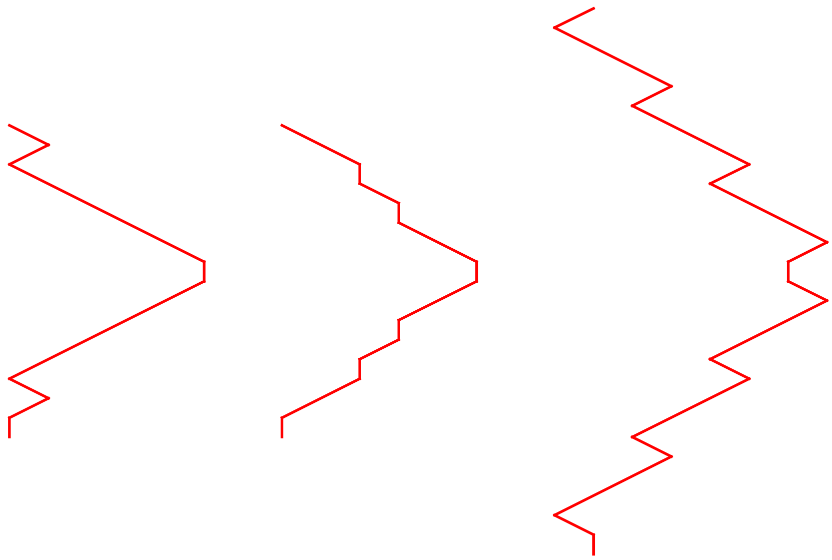
It is worth noting that these methods' plain courses are symmetrical[1] (i.e. the place notation is palindromic), hence omitting a place in the first half of the lead is necessarily mirrored by an omission in the second half. This gives rise to a peculiarity of Delight Minor methods, which can be further sub-divided into 3^{rds} place and 4^{ths} place varieties. Similar sub-divisions are also possible on higher stages (Major and above), but the sheer volume of the possible varieties makes the distinction less noteworthy.

[1] Note that the definition of a 'method' does not require symmetry; there are plenty of asymmetrical examples.

Treble Place

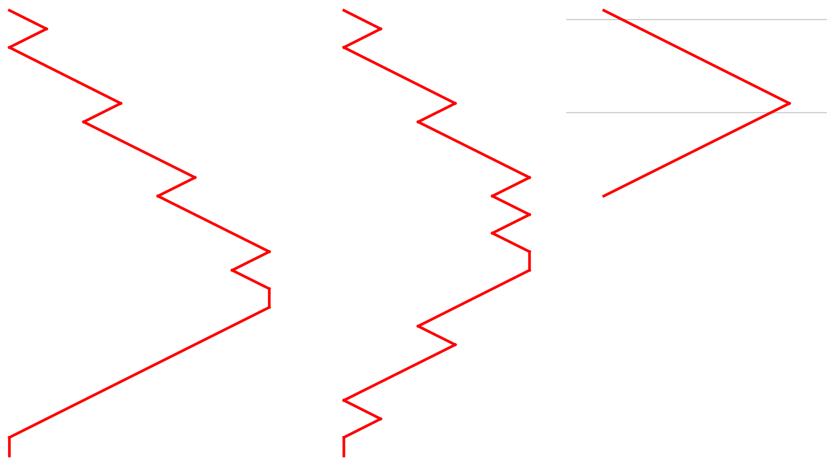
It is worth noting the separate "*Treble Place*" category where, in common with treble dodging methods, the treble lines are symmetrical and have the same number of blows in each position of the path. As the name implies, some dodges are replaced with places. However, in this category there are no *cross sections*, since the treble does not need to do dodges, so consequently there are no further sub-divisions like with treble dodging methods.

Alliance



This category requires a fixed bell with a symmetric path, and the bell does not have the same number of blows in each position. If methods do not meet the tighter constraints for Treble Dodging and Treble Place methods then they fall in this category. In other words, it's the '*everything else*' category for symmetrical hunt bell methods. Consequently this category has a wide variety of options for the treble path. A couple of examples are provided below to illustrate the variety.

Hybrid



This category requires a fixed bell and that its path is asymmetric. E.g. Briswich Hybrid Major, which is Bristol Surprise for the first half of the lead, and Norwich

Court Bob for the second (first example). The third example is deceptive, since it appears to have symmetry. But when you consider the constraints on where the lines of symmetry may be drawn, the first half of the lead has the treble hunting from 2 up to 6, and the second half has the treble hunting from 5 down to 1, hence it is considered asymmetrical, and a Hybrid not a Plain method.

Differential

All of the above categories of methods have a single set of bells rotating place bells at each lead end, so that the number of leads in the method is equal to the number of working bells. Differential methods split the working bells into two or more sets. Bells only rotate place bells within their sets. For example, instead of having a triples principle with 7 working bells rotating each lead end, you might have separate sets of 3 and 4 bells rotating. You will notice that the method will come round at neither the 3rd nor 4th lead ends, instead it will take 3 × 4 = 12 leads to complete.

You might expect the number of bells in each set to be 'co-prime[2]' to the sizes of every other set, otherwise the method would not be noteworthy nor interesting. E.g. a Minor Differential method with a set of 2 and a set of 4 working bells would come round in 4 leads, which is fewer that a single set of 6 working bells.

Upham Differential Triples,
12 lead heads

```
1234567
2315746
3127654
1236475
2314567
3125746
1237654
2316475
3124567
1235746
2317654
3126475
1234567
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Additional Tags

The additional name '*Little*' in the method name means that the hunt bell does not ring in every available place. Usually this means the treble does not make it to the back of the change, and these are the most common 'little' methods, perhaps explaining the origin of the tag's name.

The word '*Differential*' may also appear as a tag, e.g. Old Court Differential Bob Minor. In this example the method is both 'plain' and 'differential' because there is a hunt bell (the treble), as well as two sets of rotating bells, hence it's also differential. The distinction here over the previous 'differential' category is the existence of the hunt bell. Hence these methods are termed '*Differential Hunters*' by the Central Council.

Little Bob Minor

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123456
214365
241635
426153
462135
641253
614523
165432
164523
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The tag '*Reverse*' prefixes the method name when there exists another method when each change is reversed. This is the reverse of each permutation, not the order of the changes through the course. Perhaps the best-known example pair is 'Plain Bob' and 'Reverse Bob'. The former has a dodge when the treble leads, the latter when the treble lies.

[2] Share no common factors other than 1.

The tags 'Single' and 'Double' are necessarily paired. The Central Council have ruled that:

> *"If a non-Little Plain method with double symmetry[3] and either one plain hunting hunt bell or two or more principal hunts, all of which are coursing, has the same number of leads in the plain course as the corresponding method with no internal places below the hunt bell or principal hunts, they shall have the same name but with the prefixes 'Double' and 'Single' respectively."*

The example below takes a pair of well-known plain methods, and shows the *internal* places in bold. It is assumed that the reader has access to the lines for the full courses to confirm the double version has both palindromic and rotational symmetries; space does not permit the lines to be printed here. You will note from the figures below that the double version includes 3rds under the treble where the single version only has 4ths above it. Also the 2nds at the lead end is matched by a 5ths at the half lead in the double version. Hence there exist two proper methods one with double symmetry and the other without the places below the treble. Hence the pair of methods adopt the additional tags.

Single Oxford Bob Minor	Double Oxford Bob Minor
123456	123456
214**3**65	214**3**65
241**3**56	241**3**56
423165	42**3**165
432615	24**3**615
346251	4263**5**1
364521	2436**5**1
635412	42**6**315
653142	24**6**135
561**3**24	421**6**53
516**3**42	412**6**35
1**5**3624	1**4**6253
1**5**6342	1**4**2635

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Checked MBD

[3] Both palindromic symmetry (mirror image from first to last change) and rotational symmetry, looks the same rotated about 180°.