

Magic Blocks

-12-	<p><b>UNDER</b></p> <p>S1 38-12-58</p> <p>S2 38-34-12</p> <p>S3 36-12-12-58</p> <p>S4 36-12-34-58</p> <p>S5 1236-12-58</p> <p>S6 1236-34-58</p> <p>Mendip 16-14-58</p> <p>Chelsea 36-14-14-58</p>	<p>D1 16-12-58</p> <p>D2 16-34-58</p> <p>D3 16-34-12-58</p> <p>D4 16-34-34-58</p> <p>Seddfscm 1236-14-58</p> <p>Kelso 36-12-14-58</p>	<p>Cambridge 36-14-58</p> <p>Surfleet 36-14-12-58</p> <p>Beverley 36-14-34-58</p> <p>Burslem 16-34-14-58</p>
-56-	<p><b>OVER</b></p> <p>College III -56-14</p> <p>Armstrong -34-14</p> <p>Appleford 56-58-14</p> <p>Ashill 34-58-14</p> <p>Keyworth -56-1458</p> <p>Shilton -34-1458</p> <p>Egmanton -36-16</p> <p>Kerwood 36-36-14</p>	<p>Warmfield -56-16</p> <p>Newstead -34-16</p> <p>Oasis 56-34-16</p> <p>Jeremiah 34-34-16</p> <p>Beedon -36-1458</p> <p>Acle 36-58-14</p>	<p>Superlative -36-14</p> <p>Midsummr 56-36-14</p> <p>Emmanuel 34-36-14</p> <p>Tutbury 36-34-16</p>
-56-	<p><b>UNDER</b></p> <p>S7 36-12-58</p> <p>S8 36-34-12</p> <p>S9 36-12-12-58</p> <p>S10 36-12-34-58</p> <p>S11 1236-12-58</p> <p>S12 1236-34-58</p> <p>720 16-14-58</p> <p>Tokyo 36-14-14-58</p>	<p>D7 16-12-58</p> <p>D8 16-34-58</p> <p>D9 16-34-12-58</p> <p>D10 16-34-34-58</p> <p>High Halden 1236-14-58</p> <p>Kennilwrth 36-12-14-58</p>	<p>Superlative 36-14-58</p> <p>Nailsea 36-14-12-58</p> <p>Izzat 36-14-34-58</p> <p>Friday Ev. 16-34-14-58</p>
-56-12	<p><b>OVER</b></p> <p>Milton -56-14</p> <p>Lopham -34-14</p> <p>Fornsett 56-58-14</p> <p>Nicholas 34-58-14</p>	<p>Woodboro 36-36-14</p>	<p>Denver 36-58-14</p> <p>Yesittiz -36-14</p> <p>Broadston 56-36-14</p> <p>Newchurch 34-36-14</p>

# What is a Magic Block?

- A technique used to produce multi-method extents of TD Minor
- Original idea by Philip Saddleton
- Based on the six lead splice
- Under works changed at every lead end
- Over works changed at every half lead

# The six lead splice

- Ringing an extent of one method but substituting a lead of a different method each time a particular bell rings a particular place bell where the work of that place bell is the same in both methods.
- E.g. substituting a lead of Beverley or Surfleet into an extent of Cambridge whenever the tenor is 3rds place bell

Cambridge

2	5	3	4	1	6
5	2	4	3	6	1
5	4	2	3	1	6
4	5	3	2	6	1
5	4	2	3	6	1
4	5	3	2	1	6
4	3	5	2	6	1
3	4	2	5	1	6

Surfleet

2	5	3	4	1	6
2	3	5	4	6	1
3	2	4	5	1	6
3	2	5	4	6	1
2	3	4	5	6	1
2	3	5	4	1	6
3	2	4	5	6	1
3	4	2	5	1	6



A recent  
performance ...

## **Society of Cambridge Youths**

**Ringling Room, UK**

Thursday, 11 February 2021 in 1h 56

### **5040 Spliced Treble Dodging Minor (120m)**

Duke of Norfolk, Rochester, College Exercise, Ockley, Norbury, Drayton, Campanulla, British Scholars' Pleasure, Gladstone, Crofton, Hasley, Hemsworth, Barnsley, Stockbridge, South Kirkby, Havercroft, Berwyn, Felkirk, Westray, Mendip, Vatersay, Zugspitze, Taylor, Ullscarf TB; Old Oxford, Paddock, College Bob IV, Newdigate, Tuxford, Willesden, London, Darton Exercise, Disley, Hadfield, Conisborough, Europium, Staverton, Worcester, Nostell, York, Berrybrow, Queen Bess, Eyam, Burslem, Hoylandswaine, Wilmslow, Tulip, Bogedone, Rostherne, Poynton, Knutsford, Belvoir, Dunedin, Erbium, Boston, Barham, March, Selby, Rawmarsh, Staveley, Berkeley, Woodgrove, Pembroke, Oystermouth, Deepcar, Oxygen, Fluorine, Glastonbury, Neon, Peveril, Croome d'Abitot, Leasowe, Melandra, Natrium, Beeston, Kingsley, Chelsea, Beauchief, Combermere, Langsett, Vale Royal, Crowland, Canterbury, St Werburgh D; Luton, Royal Bob, Rhyl, Ripley, Bamborough, Thorne, Harwood, Linden, Unacceptable, Beighton, Cambridge, Appleby, Redcar, Coverleigh, Hatfield, Surfleet, Eastwood, Beverley, Bangor, Carlisle, Grantham, Sleaford, Osea, Chester-le-Street, Munden, Netherwood, Chester, Bakewell, Cunecastre, Minehead, Retford, Kelso, Spalding, Victoria Street, Brampton, Norwood Tunnel S

Arr. D J Pipe

1-2 Jonathan A Agg

3-4 David J Pipe (C)

5-6 William T Bosworth

First Magic Blocks on the platform. Comprising all combinations of over and under works with no internal 5ths and no single changes, from which the standard 147 are derived.

Some not so  
recent  
performances ...

**Ancient Society of College Youths**

**Cambridge**, Cambridgeshire

12 Victoria Street

Wednesday, 12 January 2005 in 6h 46 (13E)

**19440 Spliced Treble Dodging Minor (729m)**

(1-3) Lopham S, Shetland S, Hanley S, Marham S, Great Comberton S, A.C.S. S, Stac Lee S, Icarus S, Stac an Armin S, Mainland S, Stafford Double S, The Thumb S, Robert S, Prince Philip S, Patrick S, Nether Stowey S, Glint S, Spaxton S, Milton S, Hirta S, Ketteringham S, Litcham S, Chilcompton S, Matthew S, Dun S, Northumbria S, Boreray S, Eakring S, Newchurch S, Maplebeck S, Winkburn S, Royal S, Langford S, Walpole St Andrew S, Seaforth S, Audley S, Nicholas S, Va Va Voom S, William S, Hughes S, Daphne S

**Ancient Society of College Youths**

**Cambridge**, Cambridgeshire

12 Victoria Street

Wednesday, 1 June 2005 in 7h 19 (14D)

**20880 Spliced Treble Dodging Minor (1053m)**

(1-3) Lopham S, Shetland S, Hanley S, Marham S, Great Comberton S, A.C.S. S, Stac Lee S, Icarus S, Stac an Armin S, Mainland S, Stafford Double S, The Thumb S, Robert S, Prince Philip S, Patrick S, Nether Stowey S, Glint S, Spaxton S, Milton S, Hirta S, Ketteringham S, Litcham S, Chilcompton S, Matthew S, Dun S, Northumbria S, Boreray S, Eakring S, Newchurch S, Maplebeck S, Winkburn S, Royal S, Langford S, Walpole St Andrew S, Seaforth S, Audley S, Nicholas S, Va Va Voom S, William S, Hughes S, Daphne S



# Confession time

- I couldn't tell you what half those methods are!
- Conducted and rung by learning standard names for under and over works
- Available in a handy sheet ...

# Treble Dodging Minor Grids

**OVER**

-12-

Collingham -56-14	Westminst -34-14	Chieveley 56-56.14	Stotfold 34-56.14	Selston -56-1456	Averham -34-1456	Dover -36-16	London 36-36.14	Maltby -56-16	Oxford -34-16	Leckhmpn 56-34.16	Kent 34-34.16	Bunwell -36-1456	G. Orwell 36-56.14	Cambridge -36-14	Benet's 56-36.14	Carlisle 34-36.14	Hills 36-34.16
<b>S1</b> 36-12-56	<b>S2</b> 36-34-12	<b>S3</b> 36.12-12.56	<b>S4</b> 36.12-34.56	<b>S5</b> 1236-12-56	<b>S6</b> 1236-34-56	<b>Mendip</b> 16-14-56	<b>Chelsea</b> 36.14-14.56	<b>D1</b> 16-12-56	<b>D2</b> 16-34-56	<b>D3</b> 16.34-12.56	<b>D4</b> 16.34-34.56	<b>Seddiscom</b> 1236-14-56	<b>Kelso</b> 36.12-14.56	<b>Cambridge</b> 36-14-56	<b>Surfleet</b> 36.14-12.56	<b>Beverley</b> 36.14-34.56	<b>Burslem</b> 16.34-14.56

**OVER**

-56-

College III -56-14	Armstrong -34-14	Appleford 56-56.14	Ashill 34-56.14	Keyworth -56-1456	Shilton -34-1456	Egmanton -36-16	Kenwood 36-36.14	Warmfield -56-16	Newstead -34-16	Oasis 56-34.16	Jeremiah 34-34.16	Beedon -36-1456	Acle 36-56.14	Superlative -36-14	Midsumm'r 56-36.14	Emmanuel 34-36.14	Tutbury 36-34.16
<b>S7</b> 36-12-56	<b>S8</b> 36-34-12	<b>S9</b> 36.12-12.56	<b>S10</b> 36.12-34.56	<b>S11</b> 1236-12-56	<b>S12</b> 1236-34-56	<b>720</b> 16-14-56	<b>Tokyo</b> 36.14-14.56	<b>D7</b> 16-12-56	<b>D8</b> 16-34-56	<b>D9</b> 16.34-12.56	<b>D10</b> 16.34-34.56	<b>High Halden</b> 1236-14-56	<b>Kennilwrth</b> 36.12-14.56	<b>Superlative</b> 36-14-56	<b>Nailsea</b> 36.14-12.56	<b>Izzat</b> 36.14-34.56	<b>Friday Ev.</b> 16.34-14.56

**OVER**

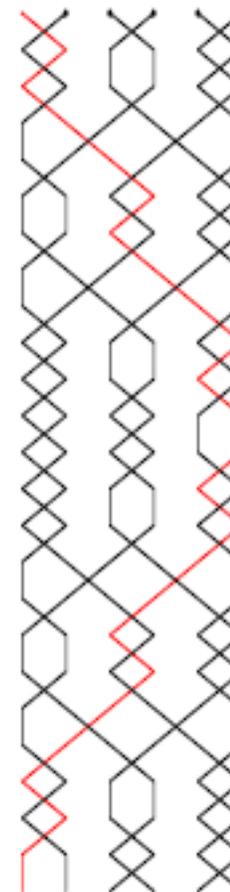
56-12

Milton -56-14	Lopham -34-14	Forncett 56-56.14	Nicholas 34-56.14	Woodboro 36-36.14	Denver 36-56.14	Yesittiz -36-14	Broadston 56-36.14	Newchurch 34-36.14
<b>S13</b> 36-12-56	<b>S14</b> 36-34-12	<b>S15</b> 36.12-12.56	<b>S16</b> 36.12-34.56	<b>Icarus</b> 36.14-14.56	<b>Comberton</b> 36.12-14.56	<b>Newchurch</b> 36-14-56	<b>Walpole</b> 36.14-12.56	<b>Audley</b> 36.14-34.56

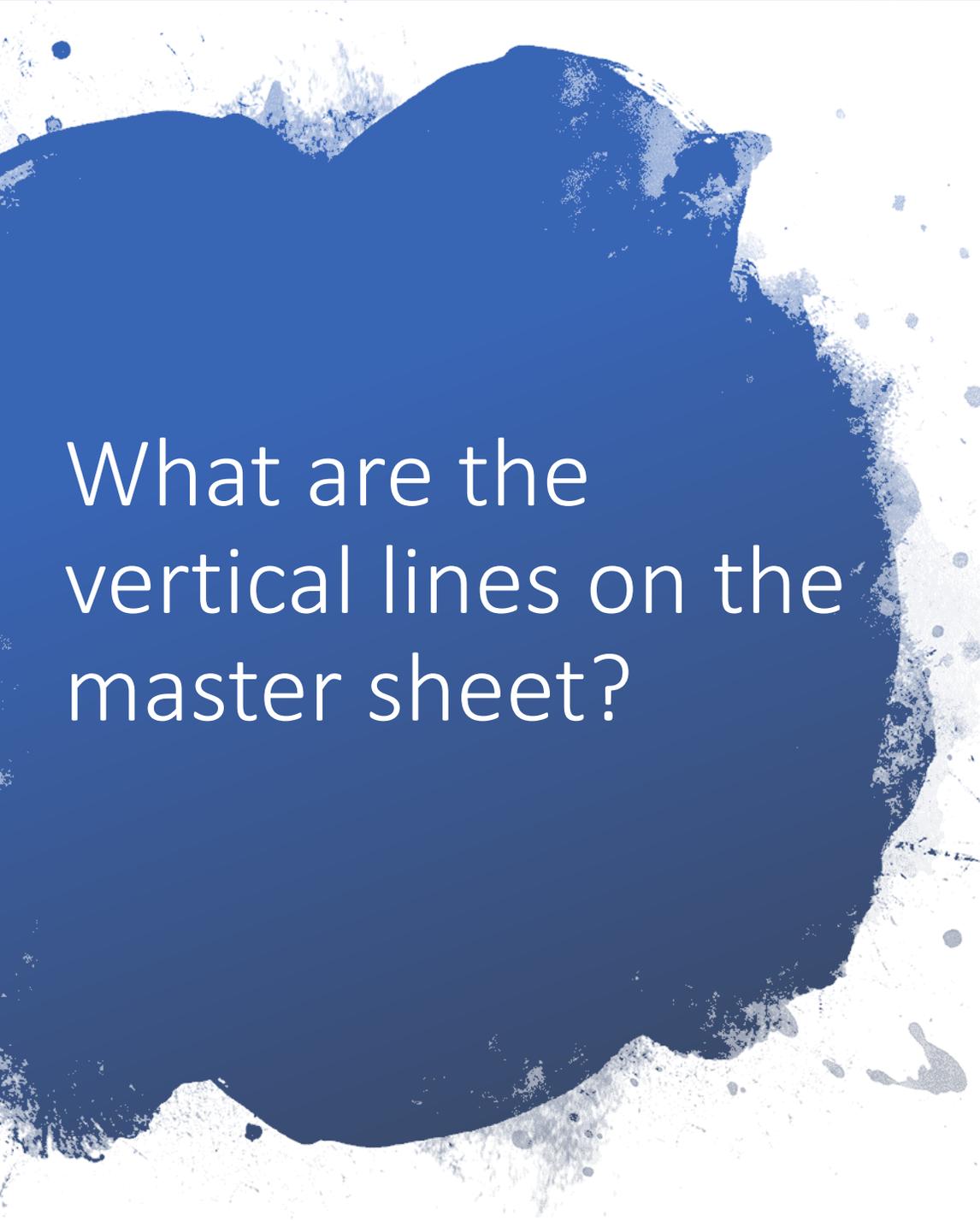
Let's have a  
closer look ...

- Oxford over: -34-16
- D2 under: 16-34-
- Treble 3-4 section is fixed: -12-
- 56 half lead is fixed
- 12 lead end is fixed
- Therefore no lead end or half lead variants

**Oxford**  
-34-16



**D2**  
16-34-56



# What are the vertical lines on the master sheet?

- These vertical lines determine the group of each under and over work.
- There are three groups: s, d and b.
- Can be thought of in terms of where you pass the treble.
- In terms of underworks ...
- s: 2nds place bell will pass the treble in 2-3
  - e.g. S1, S2, S3, S4
- d: 2nds place bell will meet the treble in 3-4
  - e.g. D1, D2, D3, D4, Kelso
- b: 2nds place bell will pass the treble in 4-5
  - e.g. Cambridge, Beverley, Surfleet



# Why are groups relevant?

- In a Magic Block extent, each bell shall make 2nds at the lead end six times and each bell shall make 5ths at the half lead six times
- Every time a particular bell makes 2nds at the lead end, the same over work is rung
- Every time a particular bell makes 5ths at the half lead, the same under work is rung
- Each time a bell makes 2nds at the lead end, a different pair of bells will make 5ths at the half lead either side
- Each time a bell makes 5ths at the half lead, a different pair of bells will make 2nds at the lead ends either side
- This guarantees a true extent
- The groups are key to the block construction

# Putting it down on paper ...

- The simplest way to represent a Magic Block composition is by listing the groups to be rung as each bell either makes 2nds at the lead end or 5ths at the half lead.
- Example: 2=Ss 3=Sb 4=Bs 5=Dd 6=Dd
- The upper case letter specifies the group to be rung as an over work when that bell makes 2nds
- The lower case letter specifies the group to be rung as an under work when that bell makes 5ths
- Not all combinations produce workable extents



Is that all the  
information needed  
to generate an  
extent?!

- Yes!
- An entire extent – or extents – can be called purely by observing the bell which will make 5ths at the next half lead or 2nds at the next lead end and calling the appropriate under or over work.
- Let's assign some methods to our example:
  - 2 = Ss = Westminster over, S1 under
  - 3 = Sb = London over, Cambridge under
  - 4 = Bs = Carlisle over, S2 under
  - 5 = Dd = Oxford over, D1 under
  - 6 = Dd = Kent over, Kelso under



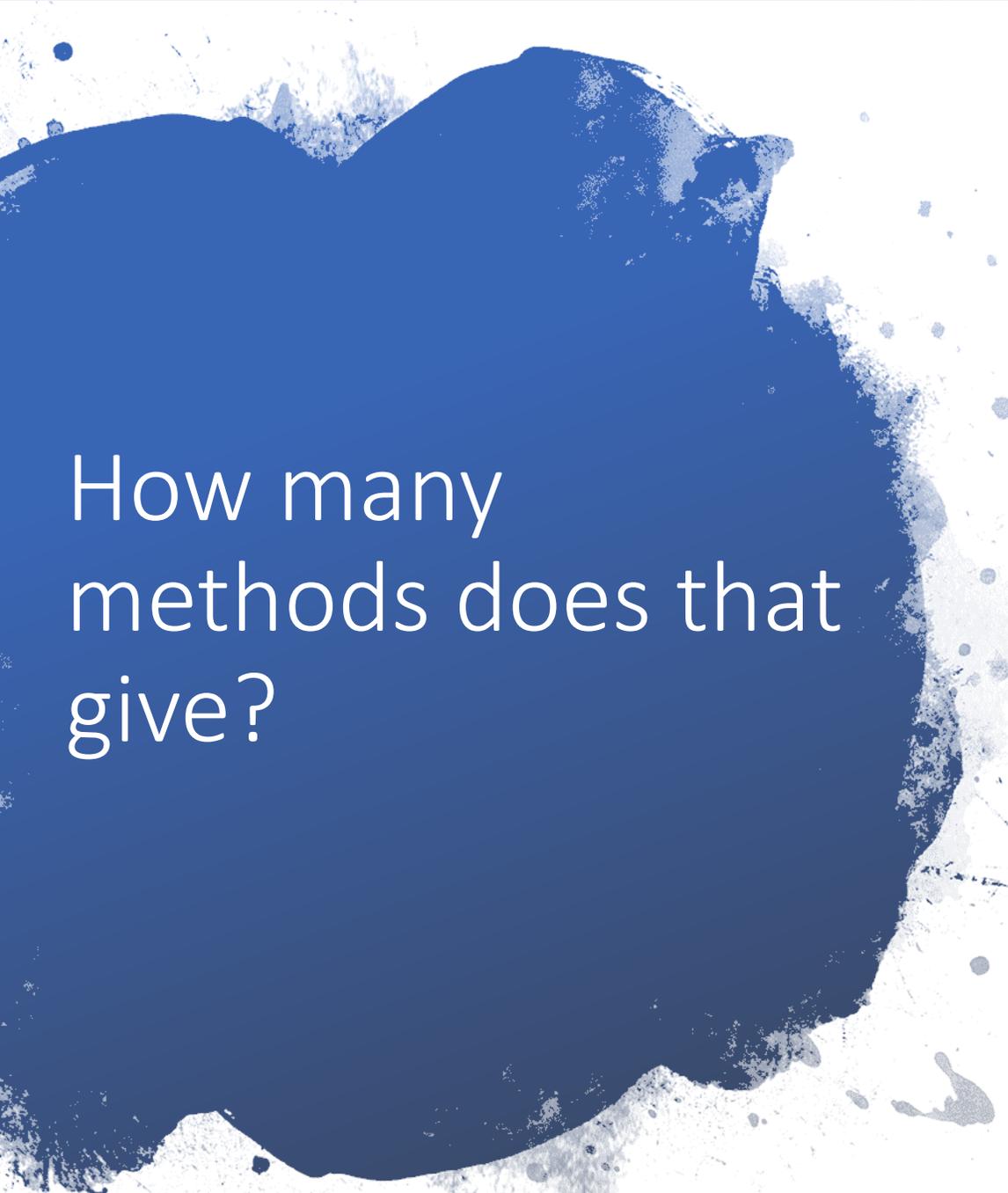
# The first few leads ...

- 2 has made 2nds so it's Westminster over
- 5 is dodging up so will stay at the back and make 5ths under the treble ... D1 under
- It's 'd' under, so we need to look for the bell that dodges 3-4 down with the treble. That's the 4, so we know that 4 will become 2nds place bell at the next lead end ... Carlisle over
- It's 'B' over, so we look for the bell dodging 3-4 up with the treble. That's the 2, so we know we need to ring S1 under in the next lead ...
- ... and so on

Are you for real?!

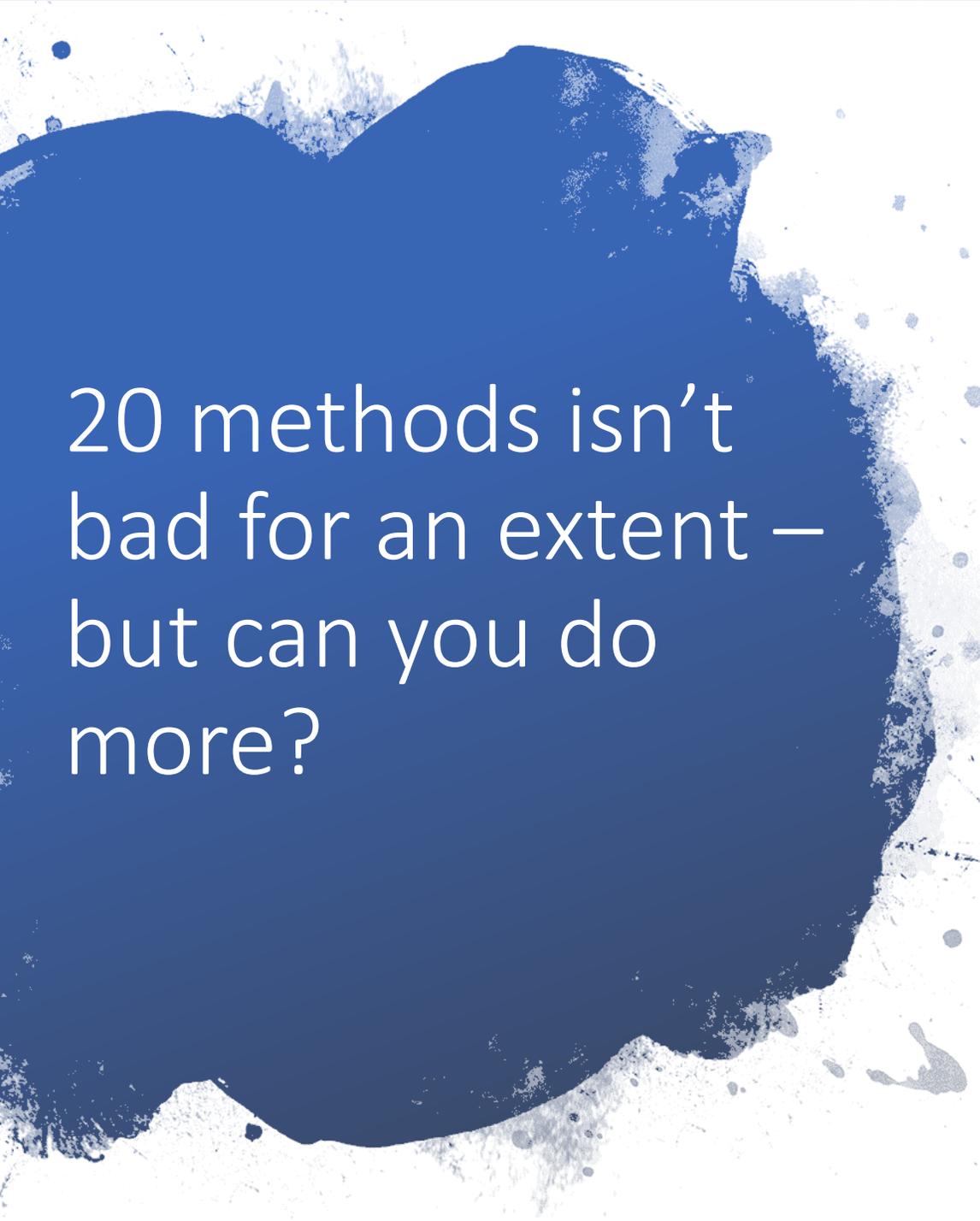
- Sort of ...
- A more detailed way of representing the calling:

2=Ss 3=Sb 4=Bs 5=Dd 6=Dd									
2		4		3		4		2	
	5a		2a		5b		3a		4a
6		4		6		3		5	
	2b		3b		2c		4a		3b
2		6		2		4		5	
	5b		3c		6a		2c		4b
2		5		6		3		6	
	6b		4c		5a		4b		3a
5		3		5		6		4	
	2b		6a		2a		5c		6c
5		4		3		2		3	
	3c		6b		5c		4c		6c



How many  
methods does that  
give?

- Each over work is combined with all the under works – except for its own bell's under work
- So we ring Westminster over Cambridge, S2, D1 and Kelso – but not Westminster over S1
- This gives five lots of four methods – 20 in total



20 methods isn't  
bad for an extent –  
but can you do  
more?

- Oh yes!
- Keep the over works as single methods but having three methods for each under work will give the maximum of 60 methods per extent.
- Using lead splices will keep the extent true – but it's not always possible to do that.
- Constructing a three extent block allows you to rotate any set of three under works so that the overall block is true

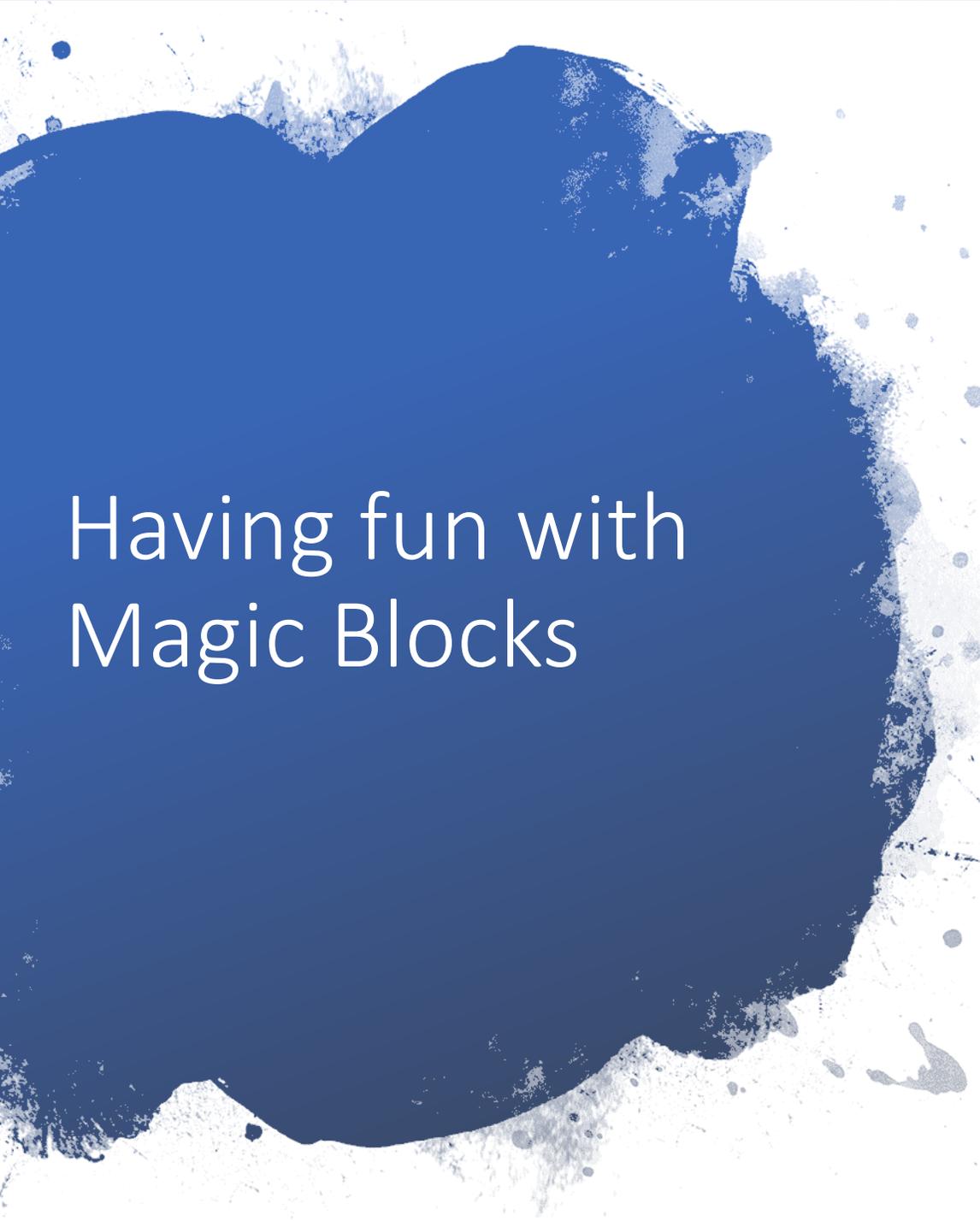
## An example calling for the 120

	Bell		2			3			4			5			6	
Extent		a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
1	Over		Westminster			Westminster			Hills			Oxford			Oxford	
	Under	Chelsea	Mendip	S1	Beverley	Surfleet			S2		D1	D2	D3		Kelso	
2	Over		London			London			Carlisle			Kent			Kent	
	Under	Mendip	S1	Chelsea	Beverley	Surfleet			S2		D1	D2	D3		Kelso	
3	Over		Dover			Dover			Cambridge			Oxford			Oxford	
	Under	S1	Chelsea	Mendip	Beverley	Surfleet			S2		D1	D2	D3		Kelso	
4	Over		Westminster			Westminster			Hills			Kent			Kent	
	Under	S4	S2	S3	Burslem	Cambridge	Cambridge		S2		D1	D2	D3		D4	
5	Over		London			London			Carlisle			Oxford			Oxford	
	Under	S4	S2	S3	Cambridge	Burslem	Cambridge		S2		D1	D2	D3		D4	
6	Over		Dover			Dover			Cambridge			Kent			Kent	
	Under	S4	S2	S3	Cambridge	Cambridge	Burslem		S2		D1	D2	D3		D4	
7	Over		Westminster			Westminster			Cambridge			Oxford			Oxford	
	Under		S2			Cambridge			S2			D2			D4	

Will any combination of groups generate a true extent?

- No – but there are quite a few that do ...

2 = Ss	3 = Ds	4 = Bs	5 = Dd	6 = Dd
2 = Ss	3 = Ds	4 = Bs	5 = Dd	6 = Bs
2 = Ss	3 = Ds	4 = Bs	5 = Db	6 = Ss
2 = Ss	3 = Ds	4 = Bs	5 = Db	6 = Db
2 = Ss	3 = Ds	4 = Bs	5 = Bs	6 = Sd
2 = Ss	3 = Ds	4 = Bs	5 = Bs	6 = Dd
2 = Ss	3 = Ds	4 = Bs	5 = Bs	6 = Bs
2 = Ss	3 = Ds	4 = Bs	5 = Bb	6 = Bb
2 = Ss	3 = Ds	4 = Bs	5 = Bb	6 = Ss
2 = Ss	3 = Ds	4 = Bb	5 = Ss	6 = Ss
2 = Ss	3 = Ds	4 = Bb	5 = Ss	6 = Sd
2 = Ss	3 = Ds	4 = Bb	5 = Sd	6 = Bs
2 = Ss	3 = Ds	4 = Bb	5 = Sd	6 = Ss
2 = Ss	3 = Ds	4 = Bb	5 = Sd	6 = Sd
2 = Ss	3 = Ds	4 = Bb	5 = Sd	6 = Db
2 = Ss	3 = Ds	4 = Bb	5 = Sd	6 = Bb
2 = Ss	3 = Ds	4 = Bb	5 = Db	6 = Sd
2 = Ss	3 = Ds	4 = Bb	5 = Db	6 = Bb
2 = Ss	3 = Ds	4 = Bb	5 = Bs	6 = Ss
2 = Ss	3 = Ds	4 = Bb	5 = Bs	6 = Bs
2 = Ss	3 = Ds	4 = Bb	5 = Bs	6 = Bb
2 = Ss	3 = Ds	4 = Bb	5 = Bb	6 = Sd
2 = Ss	3 = Ds	4 = Bb	5 = Bb	6 = Db
2 = Ss	3 = Ds	4 = Bb	5 = Bb	6 = Bs
2 = Ss	3 = Dd	4 = Ss	5 = Ss	6 = Sb
2 = Ss	3 = Dd	4 = Ss	5 = Ss	6 = Ds
2 = Ss	3 = Dd	4 = Ss	5 = Sd	6 = Db
2 = Ss	3 = Dd	4 = Ss	5 = Sd	6 = Sb
2 = Ss	3 = Dd	4 = Ss	5 = Sd	6 = Bs
2 = Ss	3 = Dd	4 = Ss	5 = Sd	6 = Bd
2 = Ss	3 = Dd	4 = Ss	5 = Sb	6 = Ss
2 = Ss	3 = Dd	4 = Ss	5 = Sb	6 = Sd
2 = Ss	3 = Dd	4 = Ss	5 = Sb	6 = Bs
2 = Ss	3 = Dd	4 = Ss	5 = Ds	6 = Ss
2 = Ss	3 = Dd	4 = Ss	5 = Ds	6 = Db
2 = Ss	3 = Dd	4 = Ss	5 = Db	6 = Ss



# Having fun with Magic Blocks

- Have a go yourselves!
- Each person rings one bell and is responsible for calling their own over and underwork
- Start simple
  - Westminster, Oxford and Cambridge over
  - S2, D2 and Cambridge under
- Bells that become 2nds place bell next lead end
  - 's' if you pass the treble in 2-3
  - 'd' if you pass the treble in 3-4
  - 'b' if you pass the treble in 4-5
- Bells that become 5ths place bell next half lead
  - 'S' if you pass the treble in 4-5
  - 'B' if you pass the treble in 3-4
  - 'D' if you pass the treble in 2-3
- You have more time than you think!



# What makes Magic Blocks so great?!

- Possibly the most intense ringing experience ever!
- So different from conventional methods
- Changes of work every few seconds
- Can go from perfection to disaster in the blink of an eye
- No cruising!

Q&A and  
feedback

