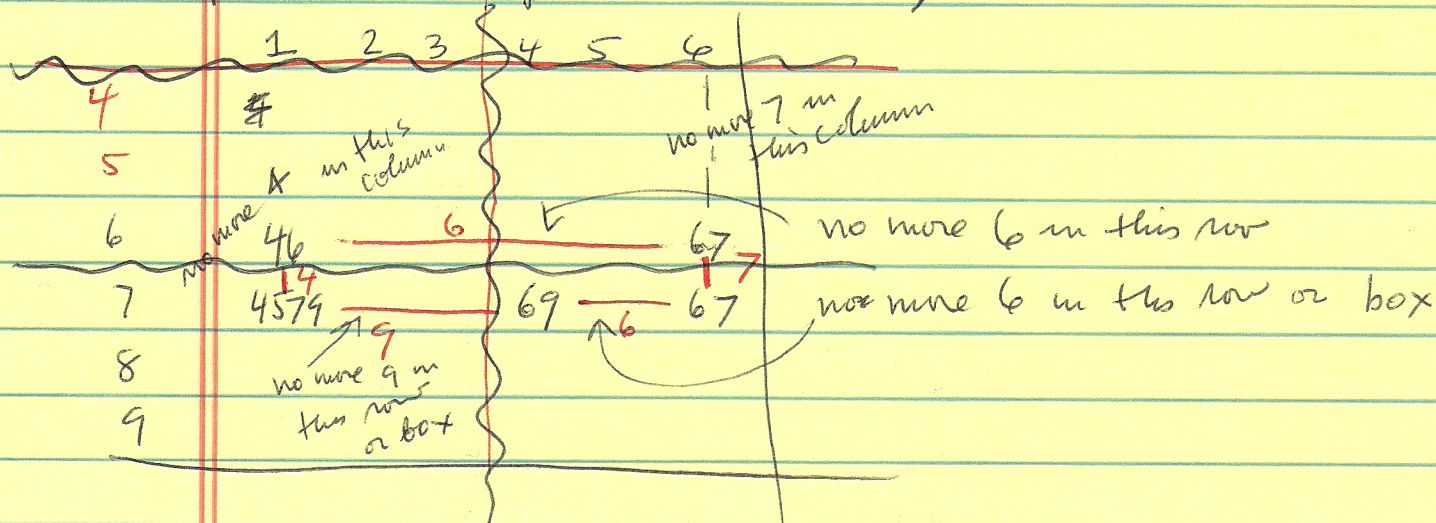


11/19/13 ①

# Gordon Chpt 10

## I NON-REPETITIVE BILOCATION cycle Example 32 original puzzle

Example 32-1 after basic techniques & candidates



4-6-7-6-9 ↺

OR 6-7-6-9-4

So cell 71 is 4 or 9 — ∴ remove 5, 7

this puts a 5 in ~~cell~~ 11 or 31

so cell 32 cannot be 5 so cell 32 is 8

the rest of the puzzle offers no difficulties

## II REPETITIVE BILOCATION Cycle (go to p. 41 for this)

in the above example no node has the same number emanating from it. i.e. it is non-repetitive



# Example 32 - my attempt at a partial solution

picture original puzzle

36 = 4

stuck here

fill in pencils after 9:05

69 = 2

84 = 8

77 = 3

start  
pink squares

1, 2, ..., 9

56 = 2

55 = 8

26 = 8

repeat pink 1, 2, ..., 9

no go

eliminate some pencils

39 = eliminate 1

79 " 5

99 " 1, 5 / 58 eliminate 5

repeat pink 1, 2  
38 = 1

97 = 1

85 = 1

68 = 3

repeat pink

11, 12, 13 eliminate 2

58 = 4

57 = 9

17 = 2

61 = eliminate 7

compare with Example 32-1

he has

33 = 2

41 = 2 ✓

99 = 6 ✓

guess

put a 4 in 41

get a contr after 15 moves

so put a 2 in 41

(no other moves are possible!)

put a 7 in 99

get a contradiction after

14 moves

so put a 6 in 99

(no other moves are possible)

put a 2 in 32 (instead of 33)

get a contradiction after 14 moves

so put a 2 at 33



we have still discrepancies ~~are~~ namely

|    |             |           |                                                          |
|----|-------------|-----------|----------------------------------------------------------|
| 11 | eliminate 9 | if put 9, | get contradiction after <sup>9</sup> <del>10</del> moves |
| 32 | "           | 7         | if put 7, " " " 15 "                                     |
| 52 | "           | 7         | if put 7 get empty square 25                             |
| 65 | "           | 6 ✓       | } remove those without checking                          |
| 72 | "           | 7 ✓       |                                                          |
| 78 | "           | 7 ✓       |                                                          |
| 92 | "           | 7 ✓       |                                                          |
| 98 | "           | 7 ✓       |                                                          |

we now have example 32-1



## II Repetitive Bilocation Cycle

Example 33 original puzzle

Example 33-1 after basic techniques & filling in candidates

|   | 1 | 2  | 3                  | 4  | 5      | 6   | 7  | 8 | 9                                                |
|---|---|----|--------------------|----|--------|-----|----|---|--------------------------------------------------|
| 1 |   | 25 |                    |    | 2 (5?) |     | 25 |   | no other 2 in this row                           |
| 2 |   |    |                    |    |        |     |    |   |                                                  |
| 3 |   | 2  | <del>25</del> (5?) |    |        |     |    | 5 | no other 5 in this column                        |
| 4 |   |    |                    |    |        |     |    |   |                                                  |
| 5 |   |    |                    | 12 | 2      | 158 | 25 |   | no other 2 in this row<br>no other 1 in this row |
| 6 |   | 25 |                    | 5  |        | 58  |    |   | no other 5 in this row                           |

no other 2 in this column

no other 8 in this column or in this box

examine all 12 if it is not 2 then 17 & 62 are both 2  
57 & 66 are both 5  
54 would be 2  
56 would be 8

No Room for 1 in Row 5  $\Rightarrow$

cell 12 is 2

The rest follows easily!?

### III bivariate graphs

Example 34 original puzzle



Example 39-1 after basic techniques & filling in candidates

|   | 1 | 2 | 3  | 4 | 5        | 6 | 7  | 8 | 9 |
|---|---|---|----|---|----------|---|----|---|---|
| 1 |   |   |    |   |          |   |    |   |   |
| 2 |   |   |    |   |          |   |    |   |   |
| 3 |   |   | 1  |   |          |   |    |   |   |
| 4 |   |   | 45 |   | <u>5</u> |   | 56 |   |   |
| 5 |   |   | 4  |   |          |   | 6  |   |   |
| 6 |   |   | 49 |   | <u>9</u> |   | 69 |   |   |

there could be other 4 in this column

there could be other 6 in this column

no more 5 in this row

there could be other ~~no more~~ 9 in this ~~column~~ row

the difference is there are only two numbers at each node  
NOTE: This example is "NON-REPETITIVE"

either 5-6-9-4 or 4-5-6-9 must occur

a 4 must go in cell 43 or 63 so you can eliminate the other 4's in box 4 and column 3

a 6 must go in cell 47 or 67 so you can eliminate the other 6's in box 6 and column 7

a 9 must go in cell 63 or 67 so you can eliminate the other 9's from row 6

Final Result - eliminating 6 from cell 17 allows us to finish the puzzle