

## Part 4: "New Advanced Study of Magic Squares and Cubes"

### Chapter 7: New Method of Composing High-Dimensional Extra-Cubic Objects and their Developed Forms: Kanji Setsuda

#### Section 6: New Method of Composing 'C&C' Magic Cubes 4<sup>3</sup> and Two Types of 'C&C' MS8<sup>2</sup> Using All View-Forms of ECO2<sup>6</sup>

##### #1. New Method of Composing Various Types of Magic Things

I have recently invented a new, unique way of composing special types of magic cubes and squares of order 4, 8, and 9, using all possible developed 'view-forms' of high dimensional Extra-Cubic Objects. I would like to report of this method and some actual results of its application.

Let me take the case of ECO2<sup>6</sup> for instance this time.

We know in the first section: if we use six-time loops of for(...){...} sentences and produce binary numbers, we can draw the 'basic view-diagrams' for ECO2<sup>6</sup>.

If you modify the program a little in the order of controllers {d0, d1, d2, d3, d4 and d5}, you could have any different view-forms of the same ECO. You could draw different pictures with n1=1 as many as 720 in all. Because  $6P_6=6 \times 5 \times 4 \times 3 \times 2 \times 1=720$ .

If you put any count-down type of conditions in the for(...){...} sentences, you could have another type of different view-forms of the same ECO. How many different pictures could we draw for that type, then?

We use 6 loops of for(...){...} sentences in all. And we have only two cases for each loop: whether we put the count-down condition or we don't. Therefore we could have different pictures of that type as many as 64 in all, because  $2^6=64$ .

Take your careful look at the next samples of 'view forms'.

List #1 shows the 2 typical 'Basic Diagrams' for our ECO2<sup>6</sup> in five developed forms.

List #2 shows the 2 types of 'view-forms' only in the style of developed MS8<sup>2</sup>.

**\*\* List #1: Two Types of Basic Diagrams for Extra-Cubic Object 2<sup>6</sup> \*\***

[A]

EC2<sup>6</sup>/

```
1---- 2      3---- 4      33----34      35----36
| 5---+ 6    | 7---+ 8    | 37---+38    | 39---+40
9--|-10 | 11--|-12 | 41--|-42 | 43--|-44 |
 13----14    15----16    45----46    47----48

17----18    19----20    49----50    51----52
| 21---+22  | 23---+24  | 53---+54  | 55---+56
25--|-26 | 27--|-28 | 57--|-58 | 59--|-60 |
 29----30    31----32    61----62    63----64
```

```
1----- 2----- 3----- 4          SC43/82
| 5      6      7      8          1 2 3 4 5 6 7 8
9   33   10   34   11   35   12   36   9 10 11 12 13 14 15 16
| 13     37----14----38----15----39---+16----40 17 18 19 20 21 22 23 24
17   41 | 18   42   19   43   20   44 | 25 26 27 28 29 30 31 32
| 21   45   22   46   23   47 | 24   48 33 34 35 36 37 38 39 40
25----49--|-26----50----27----51----28   52 | 41 42 43 44 45 46 47 48
 29   53   30   54   31   55   32   56 49 50 51 52 53 54 55 56
    57 |    58     59     60 | 57 58 59 60 61 62 63 64
    61-----62-----63-----64
```

1----- 2----- 4----- 3 CC4^3/8^2  
| 5 6 8 | 7 1 2 4 3 29 30 32 31  
9 37 10 38 12 40 11 39 9 10 12 11 21 22 24 23  
| 13 33---14---34---16---36---15---35 25 26 28 27 5 6 8 7  
25 45 | 26 46 28 48 27 47 | 17 18 20 19 13 14 16 15  
| 29 41 30 42 32 44 | 31 43 36 35 33 34 64 63 61 62  
17---61--|18---62---20---64---19 63 | 44 43 41 42 56 55 53 54  
21 57 22 58 24 60 23 59 60 59 57 58 40 39 37 38  
53 | 54 56 55 | 52 51 49 50 48 47 45 46  
49-----50-----52-----51

[B]

EC2^6/

1---- 2 3---- 4 33----34 35----36  
| 17---18 | 19---20 | 49---50 | 51---52  
5--| 6 | 7--| 8 | 37--|38 | 39--|40 |  
21----22 23----24 53----54 55----56  
  
9----10 11----12 41----42 43----44  
| 25---26 | 27---28 | 57---58 | 59---60  
13--|14 | 15--|16 | 45--|46 | 47--|48 |  
29----30 31----32 61----62 63----64

1----- 2----- 3----- 4 SC4^3/8^2  
| 17 18 19 | 20 1 2 3 4 17 18 19 20  
5 33 6 34 7 35 8 36 5 6 7 8 21 22 23 24  
| 21 49---22---50---23---51---24---52 9 10 11 12 25 26 27 28  
9 37 | 10 38 11 39 12 40 | 13 14 15 16 29 30 31 32  
| 25 53 26 54 27 55 | 28 56 33 34 35 36 49 50 51 52  
13---41--|14---42---15---43---16 44 | 37 38 39 40 53 54 55 56  
29 57 30 58 31 59 32 60 41 42 43 44 57 58 59 60  
45 | 46 47 48 | 45 46 47 48 61 62 63 64  
61-----62-----63-----64

1----- 2----- 4----- 3 CC4^3/8^2  
| 17 18 20 | 19 1 2 4 3 29 30 32 31  
5 49 6 50 8 52 7 51 5 6 8 7 25 26 28 27  
| 21 33---22---34---24---36---23---35 13 14 16 15 17 18 20 19  
13 53 | 14 54 16 56 15 55 | 9 10 12 11 21 22 24 23  
| 29 37 30 38 32 40 | 31 39 36 35 33 34 64 63 61 62  
9---61--|10---62---12---64---11 63 | 40 39 37 38 60 59 57 58  
25 45 26 46 28 48 27 47 48 47 45 46 52 51 49 50  
57 | 58 60 59 | 44 43 41 42 56 55 53 54  
41-----42-----44-----43

\*\* List #2: Type #1 of 720 View-Forms(n1=1) for the Developed EC02^6 \*\*

1/ 2/ 3/ 4/  
1 2 3 4 5 6 7 8 1 3 2 4 5 7 6 8 1 2 5 6 3 4 7 8 1 3 5 7 2 4 6 8  
9 10 11 12 13 14 15 16 9 11 10 12 13 15 14 16 9 10 13 14 11 12 15 16 9 11 13 15 10 12 14 16  
17 18 19 20 21 22 23 24 17 19 18 20 21 23 22 24 17 18 21 22 19 20 23 24 17 19 21 23 18 20 22 24  
25 26 27 28 29 30 31 32 25 27 26 28 29 31 30 32 25 26 29 30 27 28 31 32 25 27 29 31 26 28 30 32  
33 34 35 36 37 38 39 40 33 35 34 36 37 39 38 40 33 34 37 38 35 36 39 40 33 35 37 39 34 36 38 40  
41 42 43 44 45 46 47 48 41 43 42 44 45 47 46 48 41 42 45 46 43 44 47 48 41 43 45 47 42 44 46 48  
49 50 51 52 53 54 55 56 49 51 50 52 53 55 54 56 49 50 53 54 51 52 55 56 49 51 53 55 50 52 54 56  
57 58 59 60 61 62 63 64 57 59 58 60 61 63 62 64 57 58 61 62 59 60 63 64 57 59 61 63 58 60 62 64  
  
5/ 6/ 7/ 8/  
1 5 2 6 3 7 4 8 1 5 3 7 2 6 4 8 1 2 3 4 9 10 11 12 1 3 2 4 9 11 10 12  
9 13 10 14 11 15 12 16 9 13 11 15 10 14 12 16 5 6 7 8 13 14 15 16 5 7 6 8 13 15 14 16  
17 21 18 22 19 23 20 24 17 21 19 23 18 22 20 24 17 18 19 20 25 26 27 28 17 19 18 20 25 27 26 28  
25 29 26 30 27 31 28 32 25 29 27 31 26 30 28 32 21 22 23 24 29 30 31 32 21 23 22 24 29 31 30 32  
33 37 34 38 35 39 36 40 33 37 35 39 34 38 36 40 33 34 35 36 41 42 43 44 33 35 34 36 41 43 42 44  
41 45 42 46 43 47 44 48 41 45 43 47 42 46 44 48 37 38 39 40 45 46 47 48 37 39 38 40 45 47 46 48  
49 53 50 54 51 55 52 56 49 53 51 55 50 54 52 56 49 50 51 52 57 58 59 60 49 51 50 52 57 59 58 60  
57 61 58 62 59 63 60 64 57 61 59 63 58 62 60 64 53 54 55 56 61 62 63 64 53 55 54 56 61 63 62 64



41/ 1 5 9 13 2 6 10 14 17 21 25 29 18 22 26 30 3 7 11 15 4 8 12 16 19 23 27 31 20 24 28 32 33 37 41 45 34 38 42 46 49 53 57 61 50 54 58 62 35 39 43 47 36 40 44 48 51 55 59 63 52 56 60 64	42/ 1 5 9 13 3 7 11 15 17 21 25 29 19 23 27 31 2 6 10 14 4 8 12 16 18 22 26 30 20 24 28 32 33 37 41 45 35 39 43 47 49 53 57 61 51 55 59 63 34 38 42 46 36 40 44 48 50 54 58 62 52 56 60 64	43/ 1 9 2 10 3 11 4 12 17 25 18 26 19 27 20 28 5 13 6 14 7 15 8 16 21 29 22 30 23 31 24 32 33 41 34 42 35 43 36 44 49 57 50 58 51 59 52 60 37 45 38 46 39 47 40 48 53 61 54 62 55 63 56 64	44/ 1 9 3 11 2 10 4 12 17 25 19 27 18 26 20 28 5 13 7 15 6 14 8 16 21 29 23 31 22 30 24 32 33 41 35 43 34 42 36 44 49 57 51 59 50 58 52 60 37 45 39 47 38 46 40 48 53 61 55 63 54 62 56 64	45/ 1 9 2 10 5 13 6 14 17 25 18 26 21 29 22 30 3 11 4 12 7 15 8 16 19 27 20 28 23 31 24 32 33 41 34 42 37 45 38 46 49 57 50 58 53 61 54 62 35 43 36 44 39 47 40 48 51 59 52 60 55 63 56 64	46/ 1 9 3 11 5 13 7 15 17 25 19 27 21 29 23 31 2 10 4 12 6 14 8 16 18 26 20 28 22 30 24 32 33 41 35 43 37 45 39 47 49 57 51 59 53 61 55 63 34 42 36 44 38 46 40 48 50 58 52 60 54 62 56 64	47/ 1 9 5 13 2 10 6 14 17 25 21 29 18 26 22 30 3 11 7 15 4 12 8 16 19 27 23 31 20 28 24 32 33 41 37 45 34 42 38 46 49 57 53 61 50 58 54 62 35 43 39 47 36 44 40 48 51 59 55 63 52 60 56 64	48/ 1 9 5 13 3 11 7 15 17 25 21 29 19 27 23 31 2 10 6 14 4 12 8 16 18 26 22 30 20 28 24 32 33 41 37 45 35 43 39 47 49 57 53 61 51 59 55 63 34 42 38 46 36 44 40 48 50 58 54 62 52 60 56 64	49/ 1 2 3 4 17 18 19 20 5 6 7 8 21 22 23 24 9 10 11 12 25 26 27 28 13 14 15 16 29 30 31 32 33 34 35 36 49 50 51 52 37 38 39 40 53 54 55 56 41 42 43 44 57 58 59 60 45 46 47 48 61 62 63 64	50/ 1 3 2 4 17 19 18 20 5 7 6 8 21 23 22 24 9 11 10 12 25 27 26 28 13 15 14 16 29 31 30 32 33 35 34 36 49 51 50 52 37 39 38 40 53 55 54 56 41 43 42 44 57 59 58 60 45 47 46 48 61 63 62 64	51/ 1 2 5 6 17 18 21 22 3 4 7 8 19 20 23 24 9 10 13 14 25 26 29 30 11 12 15 16 27 28 31 32 33 34 37 38 49 50 53 54 35 36 39 40 51 52 55 56 41 42 45 46 57 58 61 62 43 44 47 48 59 60 63 64	52/ 1 3 5 7 17 19 21 23 2 4 6 8 18 20 22 24 9 11 13 15 25 27 29 31 10 12 14 16 26 28 30 32 33 35 37 39 49 51 53 55 34 36 38 40 50 52 54 56 41 43 45 47 57 59 61 63 42 44 46 48 58 60 62 64
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\*\* Type #2 of 64 View-Forms(n1=1~64) for the Developed EC02^6 \*\*

1/ 1 2 3 4 5 6 7 8	2/ 2 1 4 3 6 5 8 7	3/ 3 4 1 2 7 8 5 6	4/ 4 3 2 1 8 7 6 5
9 10 11 12 13 14 15 16	10 9 12 11 14 13 16 15	11 12 9 10 15 16 13 14	12 11 10 9 16 15 14 13
17 18 19 20 21 22 23 24	18 17 20 19 22 21 24 23	19 20 17 18 23 24 21 22	20 19 18 17 24 23 22 21
25 26 27 28 29 30 31 32	26 25 28 27 30 29 32 31	27 28 25 26 31 32 29 30	28 27 26 25 32 31 30 29
33 34 35 36 37 38 39 40	34 33 36 35 38 37 40 39	35 36 33 34 39 40 37 38	36 35 34 33 40 39 38 37
41 42 43 44 45 46 47 48	42 41 44 43 46 45 48 47	43 44 41 42 47 48 45 46	44 43 42 41 48 47 46 45
49 50 51 52 53 54 55 56	50 49 52 51 54 53 56 55	51 52 49 50 55 56 53 54	52 51 50 49 56 55 54 53
57 58 59 60 61 62 63 64	58 57 60 59 62 61 64 63	59 60 57 58 63 64 61 62	60 59 58 57 64 63 62 61
5/ 5 6 7 8 1 2 3 4	6/ 6 5 8 7 2 1 4 3	7/ 7 8 5 6 3 4 1 2	8/ 8 7 6 5 4 3 2 1
13 14 15 16 9 10 11 12	14 13 16 15 10 9 12 11	15 16 13 14 11 12 9 10	16 15 14 13 12 11 10 9
21 22 23 24 17 18 19 20	22 21 24 23 18 17 20 19	23 24 21 22 19 20 17 18	24 23 22 21 20 19 18 17
29 30 31 32 25 26 27 28	30 29 32 31 26 25 28 27	31 32 29 30 27 28 25 26	32 31 30 29 28 27 26 25
37 38 39 40 33 34 35 36	38 37 40 39 34 33 36 35	39 40 37 38 35 36 33 34	40 39 38 37 36 35 34 33
45 46 47 48 41 42 43 44	46 45 48 47 42 41 44 43	47 48 45 46 43 44 41 42	48 47 46 45 44 43 42 41
53 54 55 56 49 50 51 52	54 53 56 55 50 49 52 51	55 56 53 54 51 52 49 50	56 55 54 53 52 51 50 49
61 62 63 64 57 58 59 60	62 61 64 63 58 57 60 59	63 64 61 62 59 60 57 58	64 63 62 61 60 59 58 57
9/ 9 10 11 12 13 14 15 16	10/ 10 9 12 11 14 13 16 15	11/ 11 12 9 10 15 16 13 14	12/ 12 11 10 9 16 15 14 13
1 2 3 4 5 6 7 8	2 1 4 3 6 5 8 7	3 4 1 2 7 8 5 6	4 3 2 1 8 7 6 5
25 26 27 28 29 30 31 32	26 25 28 27 30 29 32 31	27 28 25 26 31 32 29 30	28 27 26 25 32 31 30 29
17 18 19 20 21 22 23 24	18 17 20 19 22 21 24 23	19 20 17 18 23 24 21 22	20 19 18 17 24 23 22 21
41 42 43 44 45 46 47 48	42 41 44 43 46 45 48 47	43 44 41 42 47 48 45 46	44 43 42 41 48 47 46 45
33 34 35 36 37 38 39 40	34 33 36 35 38 37 40 39	35 36 33 34 39 40 37 38	36 35 34 33 40 39 38 37
57 58 59 60 61 62 63 64	58 57 60 59 62 61 64 63	59 60 57 58 63 64 61 62	60 59 58 57 64 63 62 61
49 50 51 52 53 54 55 56	50 49 52 51 54 53 56 55	51 52 49 50 55 56 53 54	52 51 50 49 56 55 54 53
13/ 13 14 15 16 9 10 11 12	14/ 14 13 16 15 10 9 12 11	15/ 15 16 13 14 11 12 9 10	16/ 16 15 14 13 12 11 10 9
5 6 7 8 1 2 3 4	6 5 8 7 2 1 4 3	7 8 5 6 3 4 1 2	8 7 6 5 4 3 2 1
29 30 31 32 25 26 27 28	30 29 32 31 26 25 28 27	31 32 29 30 27 28 25 26	32 31 30 29 28 27 26 25
21 22 23 24 17 18 19 20	22 21 24 23 18 17 20 19	23 24 21 22 19 20 17 18	24 23 22 21 20 19 18 17
45 46 47 48 41 42 43 44	46 45 48 47 42 41 44 43	47 48 45 46 43 44 41 42	48 47 46 45 44 43 42 41
37 38 39 40 33 34 35 36	38 37 40 39 34 33 36 35	39 40 37 38 35 36 33 34	40 39 38 37 36 35 34 33
61 62 63 64 57 58 59 60	62 61 64 63 58 57 60 59	63 64 61 62 59 60 57 58	64 63 62 61 60 59 58 57
53 54 55 56 49 50 51 52	54 53 56 55 50 49 52 51	55 56 53 54 51 52 49 50	56 55 54 53 52 51 50 49

17/ 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48	18/ 18 17 20 19 22 21 24 23 26 25 28 27 30 29 32 31 2 1 4 3 6 5 8 7 10 9 12 11 14 13 16 15 50 49 52 51 54 53 56 55 58 57 60 59 62 61 64 63 34 33 36 35 38 37 40 39 42 41 44 43 46 45 48 47	19/ 19 20 17 18 23 24 21 22 27 28 25 26 31 32 29 30 3 4 1 2 7 8 5 6 11 12 9 10 15 16 13 14 51 52 49 50 55 56 53 54 59 60 57 58 63 64 61 62 35 36 33 34 39 40 37 38 43 44 41 42 47 48 45 46	20/ 20 19 18 17 24 23 22 21 28 27 26 25 32 31 30 29 4 3 2 1 8 7 6 5 12 11 10 9 16 15 14 13 52 51 50 49 56 55 54 53 60 59 58 57 64 63 62 61 36 35 34 33 40 39 38 37 44 43 42 41 48 47 46 45
21/ 21 22 23 24 17 18 19 20 29 30 31 32 25 26 27 28 5 6 7 8 1 2 3 4 13 14 15 16 9 10 11 12 53 54 55 56 49 50 51 52 61 62 63 64 57 58 59 60 37 38 39 40 33 34 35 36 45 46 47 48 41 42 43 44	22/ 22 21 24 23 18 17 20 19 30 29 32 31 26 25 28 27 6 5 8 7 2 1 4 3 14 13 16 15 10 9 12 11 54 53 56 55 50 49 52 51 62 61 64 63 58 57 60 59 38 37 40 39 34 33 36 35 46 45 48 47 42 41 44 43	23/ 23 24 21 22 19 20 17 18 31 32 29 30 27 28 25 26 7 8 5 6 3 4 1 2 15 16 13 14 11 12 9 10 55 56 53 54 51 52 49 50 63 64 61 62 59 60 57 58 39 40 37 38 35 36 33 34 47 48 45 46 43 44 41 42	24/ 24 23 22 21 20 19 18 17 32 31 30 29 28 27 26 25 8 7 6 5 4 3 2 1 16 15 14 13 12 11 10 9 56 55 54 53 52 51 50 49 64 63 62 61 60 59 58 57 40 39 38 37 36 35 34 33 48 47 46 45 44 43 42 41
25/ 25 26 27 28 29 30 31 32 17 18 19 20 21 22 23 24 9 10 11 12 13 14 15 16 1 2 3 4 5 6 7 8 57 58 59 60 61 62 63 64 49 50 51 52 53 54 55 56 41 42 43 44 45 46 47 48 33 34 35 36 37 38 39 40	26/ 26 25 28 27 30 29 32 31 18 17 20 19 22 21 24 23 10 9 12 11 14 13 16 15 2 1 4 3 6 5 8 7 58 57 60 59 62 61 64 63 50 49 52 51 54 53 56 55 42 41 44 43 46 45 48 47 34 33 36 35 38 37 40 39	27/ 27 28 25 26 31 32 29 30 19 20 17 18 23 24 21 22 11 12 9 10 15 16 13 14 3 4 1 2 7 8 5 6 59 60 57 58 63 64 61 62 51 52 49 50 55 56 53 54 43 44 41 42 47 48 45 46 35 36 33 34 39 40 37 38	28/ 28 27 26 25 32 31 30 29 20 19 18 17 24 23 22 21 12 11 10 9 16 15 14 13 4 3 2 1 8 7 6 5 60 59 58 57 64 63 62 61 52 51 50 49 56 55 54 53 44 43 42 41 48 47 46 45 36 35 34 33 40 39 38 37

... (Skip) ...

61/ 61 62 63 64 57 58 59 60 53 54 55 56 49 50 51 52 45 46 47 48 41 42 43 44 37 38 39 40 33 34 35 36 29 30 31 32 25 26 27 28 21 22 23 24 17 18 19 20 13 14 15 16 9 10 11 12 5 6 7 8 1 2 3 4	62/ 62 61 64 63 58 57 60 59 54 53 56 55 50 49 52 51 46 45 48 47 42 41 44 43 38 37 40 39 34 33 36 35 30 29 32 31 26 25 28 27 22 21 24 23 18 17 20 19 14 13 16 15 10 9 12 11 6 5 8 7 2 1 4 3	63/ 63 64 61 62 59 60 57 58 55 56 53 54 51 52 49 50 47 48 45 46 43 44 41 42 39 40 37 38 35 36 33 34 31 32 29 30 27 28 25 26 23 24 21 22 19 20 17 18 15 16 13 14 11 12 9 10 7 8 5 6 3 4 1 2	64/ 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
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All of them are different 'view-forms' of the same ECO2<sup>6</sup>.

How many different pictures in all can we draw, then?

As you guess, you may combine those 2 sets of view-forms above one by one, you can draw them so many as 46080 in all, because 720x64=46080.

But why do they count 46080? It is just the same count with the primitive solutions of 'Composite & Complete' Magic Cubes of order 4, or 'Multiple' type of 'C&C' Magic Squares 8<sup>2</sup>. It is also the same with the solution count of '4-type Simultaneous' Magic Squares of order 8: Multiple, 'Composite', Pan-diagonal and Self-complementary.

Is it only an accidental equality? It doesn't look so. What does it really mean?

When I watched those primitive 46080 view forms precisely, I noticed they are very similar to the solutions of 'Prototype Cubes' of order 4, which begins with the same form as the regular 3-dimensional array 4x4x4 at the first solution. They are also similar to the 'Prototype Squares' of order 8 that I made long before. The new sets of view forms are really just the same with the old Prototype sets.

Then I expected I could compose our object solutions directly by these Prototype Cubes or Prototype Squares and the "D(o it) A(fter the) M(odell) Transformation".

I was sure I could do that job well this time, surer than before.

I had to find any good 'Model' solutions and select the best one for our purpose.

## #2. How to compose 'C&C' Magic Cubes 444

Now let's use this method actually and compose three types of magic things, 'C&C'

Magic Cubes 444 and 2 types of 'Composite' MS88: Multiple and Simultaneous.

(1) First of all we are going to draw all possible view-forms of developed ECO2<sup>6</sup>. We use 6-time loops of for(...) {...} sentences, which we produce binary numbers with.

For the first preparation we calculate two types of controller modifications and save our results to the tables in advance. We use the data afterward for the 6-time loops in 'indirect addressing mode', which is rather high-level programming.

(2) Next we transform each view-form into our object. At first we make the solutions of Self-Complementary Magic Cubes 444 by DAM Transformation, and then we make 'Composite & Complete' MC444 by the type-conversion from 'S-C' into 'C&C'.

The following diagrams illustrate Basic Forms, a representative solution selected for the 'Model' and the concept of 'DAM Transformation'. A half of elements must be changed by the 'self-complementary transformation', so as to make the solution into 'S-C' type. The result must be made into 'C&C' type in the end by the type-conversion.

**\*\* Basic View-Diagram of Developed ECO2<sup>6</sup>(Prototype) \*\***

1-----	2-----	3-----	4-----	SC4^3/8^2																		
17		18		19		20		1	2	3	4	17	18	19	20							
5	33	6	34	7	35	8	36	5	6	7	8	21	22	23	24							
21	49	-----	22	-----	50	-----	23	-----	51	-----	24	-----	52	9	10	11	12	25	26	27	28	
9	37	10	38	11	39	12	40	13	14	15	16	29	30	31	32							
25	53	26	54	27	55	28	56	33	34	35	36	49	50	51	52							
13	-----	41	-----	14	-----	42	-----	15	-----	43	-----	16	44	37	38	39	40	53	54	55	56	
	29	57	30	58	31	59	32	60	41	42	43	44	57	58	59	60						
	45	46		47		48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
	61	-----	62	-----	63	-----	64															

**\*\* Representative 'Model' Solution of S-C type \*\***

1-----	63	-----	62	-----	4-----	SC4^3/8^2																
48		18		19		45		1	63	62	4	48	18	19	45							
60	32	6	34	7	35	57	29	60	6	7	57	21	43	42	24							
21	49	-----	43	-----	15	-----	42	-----	14	-----	24	-----	52	56	10	11	53	25	39	38	28	
56	37	10	27	11	26	53	40	13	51	50	16	36	30	31	33							
25	12	39	54	38	55	28	9	32	34	35	29	49	15	14	52							
13	-----	41	-----	51	-----	23	-----	50	-----	22	-----	16	44	37	27	26	40	12	54	55	9	
	36	8	30	58	31	59	33	5	41	23	22	44	8	58	59	5						
	20	46		47		17	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
	61	-----	3	-----	2	-----	64															

**\*\* Type Conversion from S-C type into C&C Solution \*\***

1-----	63	-----	4-----	62	SC4^3/8^2																	
48		18		45		19		1	63	4	62	36	30	33	31							
60	49	6	15	57	52	7	14	60	6	57	7	25	39	28	38							
21	32	-----	43	-----	34	-----	24	-----	29	-----	42	-----	35	13	51	16	50	48	18	45	19	
13	12	51	54	16	9	50	55	56	10	53	11	21	43	24	42							
36	37	30	27	33	40	31	26	29	35	32	34	64	2	61	3							
56	-----	61	-----	10	-----	3	-----	53	-----	64	-----	11	2	40	26	37	27	5	59	8	58	
	25	20	39	46	28	17	38	47	17	47	20	46	52	14	49	15						
	8	58		5		59	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
	41	-----	23	-----	44	-----	22															

But we don't have to repeat going after all the process of transformation step by step as often as 960 times. In the actual case we only have to care for the result and write such a simple dictation to the rules as follows, in place of all the process.

```
//
/** Transform each Basic Diagram of 2^6 into 'C&C' MC4^3 Solution *
/** "Do-it-After-the-Model Transformation" **
```

```

d[1]=c[1];      d[2]=c[63];      d[3]=c[4];      d[4]=c[62];
d[5]=c[60];    d[6]=c[6];      d[7]=c[57];    d[8]=c[7];
d[9]=c[13];    d[10]=c[51];   d[11]=c[16];   d[12]=c[50];
d[13]=c[56];   d[14]=c[18];   d[15]=c[53];   d[16]=c[11];
d[17]=c[48];   d[18]=c[10];   d[19]=c[45];   d[20]=c[19];
d[21]=c[21];   d[22]=c[43];   d[23]=c[24];   d[24]=c[42];
d[25]=c[36];   d[26]=c[30];   d[27]=c[33];   d[28]=c[31];
d[29]=c[25];   d[30]=c[39];   d[31]=c[28];   d[32]=c[38];
d[33]=c[49];   d[34]=c[15];   d[35]=c[52];   d[36]=c[14];
d[37]=c[12];   d[38]=c[54];   d[39]=c[9];    d[40]=c[55];
d[41]=c[61];   d[42]=c[3];    d[43]=c[64];   d[44]=c[2];
d[45]=c[8];    d[46]=c[58];   d[47]=c[5];    d[48]=c[59];
d[49]=c[32];   d[50]=c[34];   d[51]=c[29];   d[52]=c[35];
d[53]=c[37];   d[54]=c[27];   d[55]=c[40];   d[56]=c[26];
d[57]=c[20];   d[58]=c[46];   d[59]=c[17];   d[60]=c[47];
d[61]=c[41];   d[62]=c[23];   d[63]=c[44];   d[64]=c[22];
//

```

Let's actually compose our object according to our design by this method.  
The next list is a sample program of mine only with a few essential components.

```

/** New Method of Composing 'Composite & Complete' Magic Cubes 4^3 **
/** Using All Possible View-Diagrams of Developed EC Objects 2^6 **
/** File: 'NewCCMC4.c' Dictated by Kanji Setsuda on Apr.26, 2005; **
/** Revised on Aug.16, 2006 with MacOSX and Xcode 2.2; **
/** Recompiled on March 5, 2015 with MacOSX 10.10.2 and Xcode 6.1.1; **
//
#include <stdio.h>
//
long int tcnt;
short int cnt, scnt;
short vc, pc;
short tv[65][6];
short td[721][6];
long tnm[46081][65];
//
short CC, LSM;
short nm[65], uflg[65];
//
void mkfv26(void), prmt26(void);
void d26(short x, short y);
void mkso126(void);
void pr2mc4(short x, short y);
void srt265(void), exc26(short x);
//
/** Main Program *
int main(){
long int mm;
short m,n;
printf("\n");
printf("*** New Method of Composing Special Magic Squares 8^2 and Cubes 4^3 **\n");
printf("*** Using All Possible View-Diagrams of Developed EC Objects 2^6: **\n");
printf("*** Compose the Solutions of 'Composite & Complete' Magic Cubes 4^3 **\n");
vc=0; mkfv26();
pc=0; prmt26();
for(m=0;m<vc;m++){for(n=0;n<pc;n++){d26(m,n);}}
tcnt=vc*pc; cnt=0;
for(mm=0;mm<tcnt;mm++){
if((tnm[mm][1]<tnm[mm][62])&&(tnm[mm][1]<tnm[mm][56])&&(tnm[mm][1]<tnm[mm][32])){
if((tnm[mm][1]<tnm[mm][11])&&(tnm[mm][1]<tnm[mm][41])&&(tnm[mm][1]<tnm[mm][35])){
if((tnm[mm][1]<tnm[mm][22])&&(tnm[mm][63]>tnm[mm][60])&&(tnm[mm][60]>tnm[mm][48])){
tnm[cnt][0]=mm+1;
for(n=1;n<65;n++){tnm[cnt][n]=tnm[mm][n];}
cnt++;
}
}
}
}
}

```





```

        uflg[d5]=0;
    }}
    uflg[d4]=0;
}}
    uflg[d3]=0;
}}
    uflg[d2]=0;
}}
    uflg[d1]=0;
}}
    uflg[d0]=0;
}
}
//
void d26(short x, short y){
    short d0,d1,d2,d3,d4,d5;
    short t0,t1,t2,t3,t4,t5;
    short c;
    short s[6], cd[2][2];
    cd[0][0]=0; cd[0][1]=1; cd[1][0]=1; cd[1][1]=0;
    c=0;
    for(d0=0;d0<2;d0++){
        for(d1=0;d1<2;d1++){
            for(d2=0;d2<2;d2++){
                for(d3=0;d3<2;d3++){
                    for(d4=0;d4<2;d4++){
                        for(d5=0;d5<2;d5++){c++;
                            s[0]=cd[tv[x][0]][d0]; s[1]=cd[tv[x][1]][d1]; s[2]=cd[tv[x][2]][d2];
                            s[3]=cd[tv[x][3]][d3]; s[4]=cd[tv[x][4]][d4]; s[5]=cd[tv[x][5]][d5];
                            t0=td[y][0]; t1=td[y][1]; t2=td[y][2]; t3=td[y][3]; t4=td[y][4]; t5=td[y][5];
                            tnm[x*pc+y][c]=((((s[t0]*2+s[t1])*2+s[t2])*2+s[t3])*2+s[t4])*2+s[t5]+1;
                        }
                    }
                }
            }
        }
    }
}
//
/* Transform each Basic Diagram of 2^6 into 'C&C' MC4^3 Solution *
/** "Do-it-After-the-Model Transformation" **
void mkso126(){
    int m;
    short n,nm[65];
    for(m=0;m<scnt;m++){
        nm[1]=tnm[m][1];    nm[2]=tnm[m][63];    nm[3]=tnm[m][4];    nm[4]=tnm[m][62];
        nm[5]=tnm[m][60];    nm[6]=tnm[m][6];    nm[7]=tnm[m][57];    nm[8]=tnm[m][7];
        nm[9]=tnm[m][13];    nm[10]=tnm[m][51];    nm[11]=tnm[m][16];    nm[12]=tnm[m][50];
        nm[13]=tnm[m][56];    nm[14]=tnm[m][10];    nm[15]=tnm[m][53];    nm[16]=tnm[m][11];
        nm[17]=tnm[m][48];    nm[18]=tnm[m][18];    nm[19]=tnm[m][45];    nm[20]=tnm[m][19];
        nm[21]=tnm[m][21];    nm[22]=tnm[m][43];    nm[23]=tnm[m][24];    nm[24]=tnm[m][42];
        nm[25]=tnm[m][36];    nm[26]=tnm[m][30];    nm[27]=tnm[m][33];    nm[28]=tnm[m][31];
        nm[29]=tnm[m][25];    nm[30]=tnm[m][39];    nm[31]=tnm[m][28];    nm[32]=tnm[m][38];
        nm[33]=tnm[m][49];    nm[34]=tnm[m][15];    nm[35]=tnm[m][52];    nm[36]=tnm[m][14];
        nm[37]=tnm[m][12];    nm[38]=tnm[m][54];    nm[39]=tnm[m][9];    nm[40]=tnm[m][55];
        nm[41]=tnm[m][61];    nm[42]=tnm[m][3];    nm[43]=tnm[m][64];    nm[44]=tnm[m][2];
        nm[45]=tnm[m][8];    nm[46]=tnm[m][58];    nm[47]=tnm[m][5];    nm[48]=tnm[m][59];
        nm[49]=tnm[m][32];    nm[50]=tnm[m][34];    nm[51]=tnm[m][29];    nm[52]=tnm[m][35];
        nm[53]=tnm[m][37];    nm[54]=tnm[m][27];    nm[55]=tnm[m][40];    nm[56]=tnm[m][26];
        nm[57]=tnm[m][20];    nm[58]=tnm[m][46];    nm[59]=tnm[m][17];    nm[60]=tnm[m][47];
        nm[61]=tnm[m][41];    nm[62]=tnm[m][23];    nm[63]=tnm[m][44];    nm[64]=tnm[m][22];
        for(n=1;n<65;n++){tnm[m][n]=nm[n];}
    }
}
//

```

```

/** Print the Two Answers of 'C&C' MC4^3 *
void pr2mc4(short x, short y){
short m,n;
short p[2][65];
for(m=x-1;m<y;m=m+2){
for(n=0;n<65;n++){p[0][n]=tnm[m][n]; p[1][n]=tnm[m+1][n];}
printf("%30d# %36d#\n",m+1,m+2);
printf(" %2d-----%2d-----%2d-----%2d      ",
p[0][1],p[0][2],p[0][3],p[0][4]);
printf(" %2d-----%2d-----%2d-----%2d\n",
p[1][1],p[1][2],p[1][3],p[1][4]);
printf(" |%2d      %2d      %2d      |%2d      ",
p[0][17],p[0][18],p[0][19],p[0][20]);
printf(" |%2d      %2d      %2d      |%2d\n",
p[1][17],p[1][18],p[1][19],p[1][20]);
printf(" %2d %2d %2d %2d %2d %2d %2d %2d %2d %2d ",
p[0][5],p[0][33],p[0][6],p[0][34],p[0][7],p[0][35],p[0][8],p[0][36]);
printf(" %2d %2d %2d %2d %2d %2d %2d %2d\n",
p[1][5],p[1][33],p[1][6],p[1][34],p[1][7],p[1][35],p[1][8],p[1][36]);
printf(" |%2d %2d---%2d---%2d---%2d---%2d---%2d---%2d |",
p[0][21],p[0][49],p[0][22],p[0][50],p[0][23],p[0][51],p[0][24],p[0][52]);
printf(" |%2d %2d---%2d---%2d---%2d---%2d---%2d---%2d |",
p[1][21],p[1][49],p[1][22],p[1][50],p[1][23],p[1][51],p[1][24],p[1][52]);
printf(" %2d %2d | %2d %2d %2d %2d %2d %2d |",
p[0][9],p[0][37],p[0][10],p[0][38],p[0][11],p[0][39],p[0][12],p[0][40]);
printf(" %2d %2d | %2d %2d %2d %2d %2d %2d |",
p[1][9],p[1][37],p[1][10],p[1][38],p[1][11],p[1][39],p[1][12],p[1][40]);
printf(" |%2d %2d %2d %2d %2d %2d |%2d %2d ",
p[0][25],p[0][53],p[0][26],p[0][54],p[0][27],p[0][55],p[0][28],p[0][56]);
printf(" |%2d %2d %2d %2d %2d %2d |%2d %2d\n",
p[1][25],p[1][53],p[1][26],p[1][54],p[1][27],p[1][55],p[1][28],p[1][56]);
printf(" %2d---%2d-|-%2d---%2d---%2d---%2d---%2d %2d |",
p[0][13],p[0][41],p[0][14],p[0][42],p[0][15],p[0][43],p[0][16],p[0][44]);
printf(" %2d---%2d-|-%2d---%2d---%2d---%2d---%2d %2d |",
p[1][13],p[1][41],p[1][14],p[1][42],p[1][15],p[1][43],p[1][16],p[1][44]);
printf(" %2d %2d %2d %2d %2d %2d %2d %2d ",
p[0][29],p[0][57],p[0][30],p[0][58],p[0][31],p[0][59],p[0][32],p[0][60]);
printf(" %2d %2d %2d %2d %2d %2d %2d %2d\n",
p[1][29],p[1][57],p[1][30],p[1][58],p[1][31],p[1][59],p[1][32],p[1][60]);
printf(" %2d | %2d %2d %2d |",
p[0][45],p[0][46],p[0][47],p[0][48]);
printf(" %2d | %2d %2d %2d |",
p[1][45],p[1][46],p[1][47],p[1][48]);
printf(" %2d-----%2d-----%2d-----%2d ",
p[0][61],p[0][62],p[0][63],p[0][64]);
printf(" %2d-----%2d-----%2d-----%2d\n",
p[1][61],p[1][62],p[1][63],p[1][64]);
}
}
//
/** Sort the Solution Orders according to n1,n2 and n5 *
void srt265(void){
short m,n,f;
m=scnt;
do{f=0; m--;
for(n=0;n<m;n++){
if(tnm[n][1]>tnm[n+1][1]){exc26(n); f=1;}
else if((tnm[n][1]==tnm[n+1][1])&&(tnm[n][2]<tnm[n+1][2])){exc26(n); f=1;}
else if((tnm[n][1]==tnm[n+1][1])&&(tnm[n][2]==tnm[n+1][2])){
if(tnm[n][4]<tnm[n+1][4]){exc26(n); f=1;}
else if((tnm[n][4]==tnm[n+1][4])&&(tnm[n][5]<tnm[n+1][5])){exc26(n); f=1;}
else if((tnm[n][4]==tnm[n+1][4])&&(tnm[n][5]==tnm[n+1][5])){
if(tnm[n][13]<tnm[n+1][13]){exc26(n); f=1;}
}
}
}
}
}

```

```

    }
}while(f>0);
}
//
/** Exchange solution pairs according to their own values */
void exc26(short x){
    short p,sv;
    for(p=1;p<65;p++){sv=tnm[x][p]; tnm[x][p]=tnm[x+1][p]; tnm[x+1][p]=sv;}
}
//

```

This program may give you quite a different impression from the other old ones. It is really short, shorter than any other old programs. It runs very fast, faster than any other programs I have ever written before for the same object.

You cannot find any old calculations already familiar to you, even any definitions with those many simultaneous equations at the first step, either. Nor you can find any kind of check procedures here.

Though it may look peculiar, it will surely give you a reasonable result.

Let me list out the result, but part of the 960 'standard' solutions of 'C&C' MC444.

```

** New Method of Composing Special Magic Squares 8^2 and Cubes 4^3 **
** Using All Possible View-Diagrams of Developed EC Objects 2^6: **
** Compose the Solutions of 'Composite & Complete' Magic Cubes 4^3 **

```

<pre> 1# 1-----63----- 4-----62  48      18      45       19 60 49   6 15  57 52   7 14  21 32---43---34---24---29---42---35 13 12   51 54  16  9  50 55    36 37  30 27  33 40  31 26 56--61- -10-- 3---53--64---11  2    25 20 39 46  28 17  38 47    8     58      5      59    41-----23-----44-----22 </pre>	<pre> 2# 1-----63----- 4-----62  32      34      29       35 60 49   6 15  57 52   7 14  37 48---27---18---40---45---26---19 13 12   51 54  16  9  50 55    20 21  46 43  17 24  47 42 56--61- -10-- 3---53--64---11  2    41 36 23 30  44 33  22 31    8     58      5      59    25-----39-----28-----38 </pre>
<pre> 3# 1-----63----- 4-----62  56      10      53       11 60 41   6 23  57 44   7 22  13 32---51---34---16---29---50---35 21 20   43 46  24 17  42 47    36 37  30 27  33 40  31 26 48--61- -18-- 3---45--64---19  2    25 12 39 54  28  9  38 55    8     58      5      59    49-----15-----52-----14 </pre>	<pre> 4# 1-----63----- 4-----62  32      34      29       35 60 41   6 23  57 44   7 22  37 56---27---10---40---53---26---11 21 20   43 46  24 17  42 47    12 13  54 51   9 16  55 50 48--61- -18-- 3---45--64---19  2    49 36 15 30  52 33  14 31    8     58      5      59    25-----39-----28-----38 </pre>
<pre> 5# 1-----63----- 4-----62  56      10      53       11 60 25   6 39  57 28   7 38  13 48---51---18---16---45---50---19 37 36   27 30  40 33  26 31    20 21  46 43  17 24  47 42 32--61- -34-- 3---29--64---35  2    41 12 23 54  44  9  22 55    8     58      5      59    49-----15-----52-----14 </pre>	<pre> 6# 1-----63----- 4-----62  48      18      45       19 60 25   6 39  57 28   7 38  21 56---43---10---24---53---42---11 37 36   27 30  40 33  26 31    12 13  54 51   9 16  55 50 32--61- -34-- 3---29--64---35  2    49 20 15 46  52 17  14 47    8     58      5      59    41-----23-----44-----22 </pre>

7#

1-----63----- 4-----62  
 |48 18 45 |19  
 56 49 10 15 53 52 11 14  
 |25 32---39---34---28---29---38---35  
 13 8 | 51 58 16 5 50 59 |  
 |36 41 30 23 33 44 |31 22  
 60--61-|- 6-- 3---57--64--- 7 2 |  
 21 20 43 46 24 17 42 47  
 12 | 54 9 55 |  
 37-----27-----40-----26

8#

1-----63----- 4-----62  
 |32 34 29 |35  
 56 49 10 15 53 52 11 14  
 |41 48---23---18---44---45---22---19  
 13 8 | 51 58 16 5 50 59 |  
 |20 25 46 39 17 28 |47 38  
 60--61-|- 6-- 3---57--64--- 7 2 |  
 37 36 27 30 40 33 26 31  
 12 | 54 9 55 |  
 21-----43-----24-----42

9#

1-----63----- 4-----62  
 |32 34 29 |35  
 56 37 10 27 53 40 11 26  
 |41 60---23--- 6---44---57---22--- 7  
 25 20 | 39 46 28 17 38 47 |  
 | 8 13 58 51 5 16 |59 50  
 48--61-|-18-- 3---45--64---19 2 |  
 49 36 15 30 52 33 14 31  
 12 | 54 9 55 |  
 21-----43-----24-----42

10#

1-----63----- 4-----62  
 |48 18 45 |19  
 56 21 10 43 53 24 11 42  
 |25 60---39--- 6---28---57---38--- 7  
 41 36 | 23 30 44 33 22 31 |  
 | 8 13 58 51 5 16 |59 50  
 32--61-|-34-- 3---29--64---35 2 |  
 49 20 15 46 52 17 14 47  
 12 | 54 9 55 |  
 37-----27-----40-----26

11#

1-----63----- 4-----62  
 |32 34 29 |35  
 48 41 18 23 45 44 19 22  
 |49 56---15---10---52---53---14---11  
 21 8 | 43 58 24 5 42 59 |  
 |12 25 54 39 9 28 |55 38  
 60--61-|- 6-- 3---57--64--- 7 2 |  
 37 36 27 30 40 33 26 31  
 20 | 46 17 47 |  
 13-----51-----16-----50

12#

1-----63----- 4-----62  
 |32 34 29 |35  
 48 37 18 27 45 40 19 26  
 |49 60---15--- 6---52---57---14--- 7  
 25 12 | 39 54 28 9 38 55 |  
 | 8 21 58 43 5 24 |59 42  
 56--61-|-10-- 3---53--64---11 2 |  
 41 36 23 30 44 33 22 31  
 20 | 46 17 47 |  
 13-----51-----16-----50

13#

1-----63----- 6-----60  
 |48 18 43 |21  
 62 49 4 15 57 54 7 12  
 |19 32---45---34---24---27---42---37  
 11 14 | 53 52 16 9 50 55 |  
 |38 35 28 29 33 40 |31 26  
 56--59-|-10-- 5---51--64---13 2 |  
 25 22 39 44 30 17 36 47  
 8 | 58 3 61 |  
 41-----23-----46-----20

14#

1-----63----- 6-----60  
 |32 34 27 |37  
 62 49 4 15 57 54 7 12  
 |35 48---29---18---40---43---26---21  
 11 14 | 53 52 16 9 50 55 |  
 |22 19 44 45 17 24 |47 42  
 56--59-|-10-- 5---51--64---13 2 |  
 41 38 23 28 46 33 20 31  
 8 | 58 3 61 |  
 25-----39-----30-----36

15#

1-----63----- 6-----60  
 |56 10 51 |13  
 62 41 4 23 57 46 7 20  
 |11 32---53---34---16---27---50---37  
 19 22 | 45 44 24 17 42 47 |  
 |38 35 28 29 33 40 |31 26  
 48--59-|-18-- 5---43--64---21 2 |  
 25 14 39 52 30 9 36 55  
 8 | 58 3 61 |  
 49-----15-----54-----12

16#

1-----63----- 6-----60  
 |32 34 27 |37  
 62 41 4 23 57 46 7 20  
 |35 56---29---10---40---51---26---13  
 19 22 | 45 44 24 17 42 47 |  
 |14 11 52 53 9 16 |55 50  
 48--59-|-18-- 5---43--64---21 2 |  
 49 38 15 28 54 33 12 31  
 8 | 58 3 61 |  
 25-----39-----30-----36

17#

1-----63----- 6-----60  
 |56 10 51 |13  
 62 25 4 39 57 30 7 36  
 |11 48---53---18---16---43---50---21  
 35 38 | 29 28 40 33 26 31 |  
 |22 19 44 45 17 24 |47 42  
 32--59-|-34-- 5---27--64---37 2 |  
 41 14 23 52 46 9 20 55  
 8 | 58 3 61 |  
 49-----15-----54-----12

18#

1-----63----- 6-----60  
 |48 18 43 |21  
 62 25 4 39 57 30 7 36  
 |19 56---45---10---24---51---42---13  
 35 38 | 29 28 40 33 26 31 |  
 |14 11 52 53 9 16 |55 50  
 32--59-|-34-- 5---27--64---37 2 |  
 49 22 15 44 54 17 12 47  
 8 | 58 3 61 |  
 41-----23-----46-----20

19#  
 1-----63----- 6-----60  
 |48 18 43 |21  
 56 49 10 15 51 54 13 12  
 |25 32---39---34---30---27---36---37  
 11 8 | 53 58 16 3 50 61 |  
 |38 41 28 23 33 46 |31 20  
 62--59-|- 4-- 5---57--64--- 7 2 |  
 19 22 45 44 24 17 42 47  
 14 | 52 9 55 |  
 35-----29-----40-----26

20#  
 1-----63----- 6-----60  
 |32 34 27 |37  
 56 49 10 15 51 54 13 12  
 |41 48---23---18---46---43---20---21  
 11 8 | 53 58 16 3 50 61 |  
 |22 25 44 39 17 30 |47 36  
 62--59-|- 4-- 5---57--64--- 7 2 |  
 35 38 29 28 40 33 26 31  
 14 | 52 9 55 |  
 19-----45-----24-----42

21#  
 1-----63----- 6-----60  
 |32 34 27 |37  
 56 35 10 29 51 40 13 26  
 |41 62---23--- 4---46---57---20--- 7  
 25 22 | 39 44 30 17 36 47 |  
 | 8 11 58 53 3 16 |61 50  
 48--59-|-18-- 5---43--64---21 2 |  
 49 38 15 28 54 33 12 31  
 14 | 52 9 55 |  
 19-----45-----24-----42

22#  
 1-----63----- 6-----60  
 |48 18 43 |21  
 56 19 10 45 51 24 13 42  
 |25 62---39--- 4---30---57---36--- 7  
 41 38 | 23 28 46 33 20 31 |  
 | 8 11 58 53 3 16 |61 50  
 32--59-|-34-- 5---27--64---37 2 |  
 49 22 15 44 54 17 12 47  
 14 | 52 9 55 |  
 35-----29-----40-----26

23#  
 1-----63----- 6-----60  
 |32 34 27 |37  
 48 41 18 23 43 46 21 20  
 |49 56---15---10---54---51---12---13  
 19 8 | 45 58 24 3 42 61 |  
 |14 25 52 39 9 30 |55 36  
 62--59-|- 4-- 5---57--64--- 7 2 |  
 35 38 29 28 40 33 26 31  
 22 | 44 17 47 |  
 11-----53-----16-----50

24#  
 1-----63----- 6-----60  
 |32 34 27 |37  
 48 35 18 29 43 40 21 26  
 |49 62---15--- 4---54---57---12--- 7  
 25 14 | 39 52 30 9 36 55 |  
 | 8 19 58 45 3 24 |61 42  
 56--59-|-10-- 5---51--64---13 2 |  
 41 38 23 28 46 33 20 31  
 22 | 44 17 47 |  
 11-----53-----16-----50

25#  
 1-----63-----10-----56  
 |48 18 39 |25  
 62 49 4 15 53 58 11 8  
 |19 32---45---34---28---23---38---41  
 7 14 | 57 52 16 5 50 59 |  
 |42 35 24 29 33 44 |31 22  
 60--55-|- 6-- 9---51--64---13 2 |  
 21 26 43 40 30 17 36 47  
 12 | 54 3 61 |  
 37-----27-----46-----20

26#  
 1-----63-----10-----56  
 |32 34 23 |41  
 62 49 4 15 53 58 11 8  
 |35 48---29---18---44---39---22---25  
 7 14 | 57 52 16 5 50 59 |  
 |26 19 40 45 17 28 |47 38  
 60--55-|- 6-- 9---51--64---13 2 |  
 37 42 27 24 46 33 20 31  
 12 | 54 3 61 |  
 21-----43-----30-----36

27#  
 1-----63-----10-----56  
 |60 6 51 |13  
 62 37 4 27 53 46 11 20  
 | 7 32---57---34---16---23---50---41  
 19 26 | 45 40 28 17 38 47 |  
 |42 35 24 29 33 44 |31 22  
 48--55-|-18-- 9---39--64---25 2 |  
 21 14 43 52 30 5 36 59  
 12 | 54 3 61 |  
 49-----15-----58----- 8

28#  
 1-----63-----10-----56  
 |32 34 23 |41  
 62 37 4 27 53 46 11 20  
 |35 60---29--- 6---44---51---22---13  
 19 26 | 45 40 28 17 38 47 |  
 |14 7 52 57 5 16 |59 50  
 48--55-|-18-- 9---39--64---25 2 |  
 49 42 15 24 58 33 8 31  
 12 | 54 3 61 |  
 21-----43-----30-----36

29#  
 1-----63-----10-----56  
 |60 6 51 |13  
 62 21 4 43 53 30 11 36  
 | 7 48---57---18---16---39---50---25  
 35 42 | 29 24 44 33 22 31 |  
 |26 19 40 45 17 28 |47 38  
 32--55-|-34-- 9---23--64---41 2 |  
 37 14 27 52 46 5 20 59  
 12 | 54 3 61 |  
 49-----15-----58----- 8

30#  
 1-----63-----10-----56  
 |48 18 39 |25  
 62 21 4 43 53 30 11 36  
 |19 60---45--- 6---28---51---38---13  
 35 42 | 29 24 44 33 22 31 |  
 |14 7 52 57 5 16 |59 50  
 32--55-|-34-- 9---23--64---41 2 |  
 49 26 15 40 58 17 8 47  
 12 | 54 3 61 |  
 37-----27-----46-----20

31#  
 1-----63-----10-----56  
 |48 18 39 |25  
 60 49 6 15 51 58 13 8  
 |21 32---43---34---30---23---36---41  
 7 12 | 57 54 16 3 50 61 |  
 |42 37 24 27 33 46 |31 20  
 62--55-|- 4-- 9--53--64---11 2 |  
 19 26 45 40 28 17 38 47  
 14 | 52 5 59 |  
 35-----29-----44-----22

32#  
 1-----63-----10-----56  
 |32 34 23 |41  
 60 49 6 15 51 58 13 8  
 |37 48---27---18---46---39---20---25  
 7 12 | 57 54 16 3 50 61 |  
 |26 21 40 43 17 30 |47 36  
 62--55-|- 4-- 9--53--64---11 2 |  
 35 42 29 24 44 33 22 31  
 14 | 52 5 59 |  
 19-----45-----28-----38

33#  
 1-----63-----10-----56  
 |32 34 23 |41  
 60 35 6 29 51 44 13 22  
 |37 62---27-- 4---46--53---20--11  
 21 26 | 43 40 30 17 36 47 |  
 |12 7 54 57 3 16 |61 50  
 48--55-|-18-- 9--39--64---25 2 |  
 49 42 15 24 58 33 8 31  
 14 | 52 5 59 |  
 19-----45-----28-----38

34#  
 1-----63-----10-----56  
 |48 18 39 |25  
 60 19 6 45 51 28 13 38  
 |21 62---43-- 4---30--53---36--11  
 37 42 | 27 24 46 33 20 31 |  
 |12 7 54 57 3 16 |61 50  
 32--55-|-34-- 9--23--64---41 2 |  
 49 26 15 40 58 17 8 47  
 14 | 52 5 59 |  
 35-----29-----44-----22

35#  
 1-----63-----10-----56  
 |32 34 23 |41  
 48 37 18 27 39 46 25 20  
 |49 60---15-- 6---58--51--- 8--13  
 19 12 | 45 54 28 3 38 61 |  
 |14 21 52 43 5 30 |59 36  
 62--55-|- 4-- 9--53--64---11 2 |  
 35 42 29 24 44 33 22 31  
 26 | 40 17 47 |  
 7-----57-----16-----50

36#  
 1-----63-----10-----56  
 |32 34 23 |41  
 48 35 18 29 39 44 25 22  
 |49 62---15-- 4---58--53--- 8--11  
 21 14 | 43 52 30 5 36 59 |  
 |12 19 54 45 3 28 |61 38  
 60--55-|- 6-- 9--51--64---13 2 |  
 37 42 27 24 46 33 20 31  
 26 | 40 17 47 |  
 7-----57-----16-----50

37#  
 1-----63-----18-----48  
 |56 10 39 |25  
 62 41 4 23 45 58 19 8  
 |11 32---53---34---28--15---38--49  
 7 22 | 57 44 24 5 42 59 |  
 |50 35 16 29 33 52 |31 14  
 60--47-|- 6--17---43--64---21 2 |  
 13 26 51 40 30 9 36 55  
 20 | 46 3 61 |  
 37-----27-----54-----12

38#  
 1-----63-----18-----48  
 |32 34 15 |49  
 62 41 4 23 45 58 19 8  
 |35 56---29--10---52--39---14--25  
 7 22 | 57 44 24 5 42 59 |  
 |26 11 40 53 9 28 |55 38  
 60--47-|- 6--17---43--64---21 2 |  
 37 50 27 16 54 33 12 31  
 20 | 46 3 61 |  
 13-----51-----30-----36

39#  
 1-----63-----18-----48  
 |60 6 43 |21  
 62 37 4 27 45 54 19 12  
 | 7 32---57--34---24--15---42--49  
 11 26 | 53 40 28 9 38 55 |  
 |50 35 16 29 33 52 |31 14  
 56--47-|-10--17---39--64---25 2 |  
 13 22 51 44 30 5 36 59  
 20 | 46 3 61 |  
 41-----23-----58----- 8

40#  
 1-----63-----18-----48  
 |32 34 15 |49  
 62 37 4 27 45 54 19 12  
 |35 60---29-- 6---52--43---14--21  
 11 26 | 53 40 28 9 38 55 |  
 |22 7 44 57 5 24 |59 42  
 56--47-|-10--17---39--64---25 2 |  
 41 50 23 16 58 33 8 31  
 20 | 46 3 61 |  
 13-----51-----30-----36

41#  
 1-----63-----18-----48  
 |60 6 43 |21  
 62 13 4 51 45 30 19 36  
 | 7 56---57--10---24--39---42--25  
 35 50 | 29 16 52 33 14 31 |  
 |26 11 40 53 9 28 |55 38  
 32--47-|-34--17---15--64---49 2 |  
 37 22 27 44 54 5 12 59  
 20 | 46 3 61 |  
 41-----23-----58----- 8

42#  
 1-----63-----18-----48  
 |56 10 39 |25  
 62 13 4 51 45 30 19 36  
 |11 60---53-- 6---28--43---38--21  
 35 50 | 29 16 52 33 14 31 |  
 |22 7 44 57 5 24 |59 42  
 32--47-|-34--17---15--64---49 2 |  
 41 26 23 40 58 9 8 55  
 20 | 46 3 61 |  
 37-----27-----54-----12

43#

1-----63-----18-----48  
 |56        10        39        |25  
 60 41    6 23 43 58 21 8  
 |13 32---51--34---30--15---36--49  
 7 20 | 57 46 24 3 42 61 |  
 |50 37 16 27 33 54 |31 12  
 62--47-|- 4--17---45--64---19 2 |  
 11 26 53 40 28 9 38 55  
 22 |    44        5        59 |  
 35-----29-----52-----14

44#

1-----63-----18-----48  
 |32        34        15        |49  
 60 41    6 23 43 58 21 8  
 |37 56---27--10---54--39---12--25  
 7 20 | 57 46 24 3 42 61 |  
 |26 13 40 51 9 30 |55 36  
 62--47-|- 4--17---45--64---19 2 |  
 35 50 29 16 52 33 14 31  
 22 |    44        5        59 |  
 11-----53-----28-----38

45#

1-----63-----18-----48  
 |32        34        15        |49  
 60 35    6 29 43 52 21 14  
 |37 62---27-- 4---54--45---12--19  
 13 26 | 51 40 30 9 36 55 |  
 |20 7 46 57 3 24 |61 42  
 56--47-|-10--17---39--64---25 2 |  
 41 50 23 16 58 33 8 31  
 22 |    44        5        59 |  
 11-----53-----28-----38

46#

1-----63-----18-----48  
 |56        10        39        |25  
 60 11    6 53 43 28 21 38  
 |13 62---51-- 4---30--45---36--19  
 37 50 | 27 16 54 33 12 31 |  
 |20 7 46 57 3 24 |61 42  
 32--47-|-34--17---15--64---49 2 |  
 41 26 23 40 58 9 8 55  
 22 |    44        5        59 |  
 35-----29-----52-----14

47#

1-----63-----18-----48  
 |32        34        15        |49  
 56 37 10 27 39 54 25 12  
 |41 60---23-- 6---58--43--- 8--21  
 11 20 | 53 46 28 3 38 61 |  
 |22 13 44 51 5 30 |59 36  
 62--47-|- 4--17---45--64---19 2 |  
 35 50 29 16 52 33 14 31  
 26 |    40        9        55 |  
 7-----57-----24-----42

48#

1-----63-----18-----48  
 |32        34        15        |49  
 56 35 10 29 39 52 25 14  
 |41 62---23-- 4---58--45--- 8--19  
 13 22 | 51 44 30 5 36 59 |  
 |20 11 46 53 3 28 |61 38  
 60--47-|- 6--17---43--64---21 2 |  
 37 50 27 16 54 33 12 31  
 26 |    40        9        55 |  
 7-----57-----24-----42

49#

1-----63-----34-----32  
 |56        10        23        |41  
 62 25 4 39 29 58 35 8  
 |11 48---53--18---44--15---22--49  
 7 38 | 57 28 40 5 26 59 |  
 |50 19 16 45 17 52 |47 14  
 60--31-|- 6--33---27--64---37 2 |  
 13 42 51 24 46 9 20 55  
 36 |    30        3        61 |  
 21-----43-----54-----12

50#

1-----63-----34-----32  
 |48        18        15        |49  
 62 25 4 39 29 58 35 8  
 |19 56---45--10---52--23---14--41  
 7 38 | 57 28 40 5 26 59 |  
 |42 11 24 53 9 44 |55 22  
 60--31-|- 6--33---27--64---37 2 |  
 21 50 43 16 54 17 12 47  
 36 |    30        3        61 |  
 13-----51-----46-----20

51#

1-----63-----34-----32  
 |60        6        27        |37  
 62 21 4 43 29 54 35 12  
 | 7 48---57--18---40--15---26--49  
 11 42 | 53 24 44 9 22 55 |  
 |50 19 16 45 17 52 |47 14  
 56--31-|-10--33---23--64---41 2 |  
 13 38 51 28 46 5 20 59  
 36 |    30        3        61 |  
 25-----39-----58----- 8

52#

1-----63-----34-----32  
 |48        18        15        |49  
 62 21 4 43 29 54 35 12  
 |19 60---45-- 6---52--27---14--37  
 11 42 | 53 24 44 9 22 55 |  
 |38 7 28 57 5 40 |59 26  
 56--31-|-10--33---23--64---41 2 |  
 25 50 39 16 58 17 8 47  
 36 |    30        3        61 |  
 13-----51-----46-----20

53#

1-----63-----34-----32  
 |60        6        27        |37  
 62 13 4 51 29 46 35 20  
 | 7 56---57--10---40--23---26--41  
 19 50 | 45 16 52 17 14 47 |  
 |42 11 24 53 9 44 |55 22  
 48--31-|-18--33---15--64---49 2 |  
 21 38 43 28 54 5 12 59  
 36 |    30        3        61 |  
 25-----39-----58----- 8

54#

1-----63-----34-----32  
 |56        10        23        |41  
 62 13 4 51 29 46 35 20  
 |11 60---53-- 6---44--27---22--37  
 19 50 | 45 16 52 17 14 47 |  
 |38 7 28 57 5 40 |59 26  
 48--31-|-18--33---15--64---49 2 |  
 25 42 39 24 58 9 8 55  
 36 |    30        3        61 |  
 21-----43-----54-----12

55#  
 1-----63-----34-----32  
 |56 10 23 |41  
 60 25 6 39 27 58 37 8  
 |13 48---51--18---46--15---20--49  
 7 36 | 57 30 40 3 26 61 |  
 |50 21 16 43 17 54 |47 12  
 62--31-|- 4--33---29--64---35 2 |  
 11 42 53 24 44 9 22 55  
 38 | 28 5 59 |  
 19-----45-----52-----14

56#  
 1-----63-----34-----32  
 |48 18 15 |49  
 60 25 6 39 27 58 37 8  
 |21 56---43--10---54--23---12--41  
 7 36 | 57 30 40 3 26 61 |  
 |42 13 24 51 9 46 |55 20  
 62--31-|- 4--33---29--64---35 2 |  
 19 50 45 16 52 17 14 47  
 38 | 28 5 59 |  
 11-----53-----44-----22

57#  
 1-----63-----34-----32  
 |48 18 15 |49  
 60 19 6 45 27 52 37 14  
 |21 62---43-- 4---54--29---12--35  
 13 42 | 51 24 46 9 20 55 |  
 |36 7 30 57 3 40 |61 26  
 56--31-|-10--33---23--64---41 2 |  
 25 50 39 16 58 17 8 47  
 38 | 28 5 59 |  
 11-----53-----44-----22

58#  
 1-----63-----34-----32  
 |56 10 23 |41  
 60 11 6 53 27 44 37 22  
 |13 62---51-- 4---46--29---20--35  
 21 50 | 43 16 54 17 12 47 |  
 |36 7 30 57 3 40 |61 26  
 48--31-|-18--33---15--64---49 2 |  
 25 42 39 24 58 9 8 55  
 38 | 28 5 59 |  
 19-----45-----52-----14

59#  
 1-----63-----34-----32  
 |48 18 15 |49  
 56 21 10 43 23 54 41 12  
 |25 60---39-- 6---58--27--- 8--37  
 11 36 | 53 30 44 3 22 61 |  
 |38 13 28 51 5 46 |59 20  
 62--31-|- 4--33---29--64---35 2 |  
 19 50 45 16 52 17 14 47  
 42 | 24 9 55 |  
 7-----57-----40-----26

60#  
 1-----63-----34-----32  
 |48 18 15 |49  
 56 19 10 45 23 52 41 14  
 |25 62---39-- 4---58--29--- 8--35  
 13 38 | 51 28 46 5 20 59 |  
 |36 11 30 53 3 44 |61 22  
 60--31-|- 6--33---27--64---37 2 |  
 21 50 43 16 54 17 12 47  
 42 | 24 9 55 |  
 7-----57-----40-----26

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119#  
 1-----56-----13-----60  
 |32 41 20 |37  
 48 35 25 22 36 47 21 26  
 |49 62--- 8--11---61--50---12-- 7  
 18 14 | 39 59 30 2 43 55 |  
 |15 19 58 38 3 31 |54 42  
 63--52-|-10-- 5---51--64--- 6 9 |  
 34 45 23 28 46 33 27 24  
 29 | 44 17 40 |  
 4-----53-----16-----57

120#  
 1-----56-----13-----60  
 |32 41 20 |37  
 48 34 25 23 36 46 21 27  
 |49 63--- 8--10---61--51---12-- 6  
 19 15 | 38 58 31 3 42 54 |  
 |14 18 59 39 2 30 |55 43  
 62--52-|-11-- 5---50--64--- 7 9 |  
 35 45 22 28 47 33 26 24  
 29 | 44 17 40 |  
 4-----53-----16-----57

121#  
 2-----64----- 3-----61  
 |47 17 46 |20  
 59 50 5 16 58 51 8 13  
 |22 31---44--33---23--30---41--36  
 14 11 | 52 53 15 10 49 56 |  
 |35 38 29 28 34 39 |32 25  
 55--62-|- 9-- 4---54--63---12 1 |  
 26 19 40 45 27 18 37 48  
 7 | 57 6 60 |  
 42-----24-----43-----21

122#  
 2-----64----- 3-----61  
 |31 33 30 |36  
 59 50 5 16 58 51 8 13  
 |38 47---28--17---39--46---25--20  
 14 11 | 52 53 15 10 49 56 |  
 |19 22 45 44 18 23 |48 41  
 55--62-|- 9-- 4---54--63---12 1 |  
 42 35 24 29 43 34 21 32  
 7 | 57 6 60 |  
 26-----40-----27-----37

.....

239#  
 2-----55-----14-----59  
 |31 42 19 |38  
 47 36 26 21 35 48 22 25  
 |50 61--- 7--12---62--49---11-- 8  
 17 13 | 40 60 29 1 44 56 |  
 |16 20 57 37 4 32 |53 41  
 64--51-|- 9-- 6---52--63--- 5 10 |

240#  
 2-----55-----14-----59  
 |31 42 19 |38  
 47 33 26 24 35 45 22 28  
 |50 64--- 7-- 9---62--52---11-- 5  
 20 16 | 37 57 32 4 41 53 |  
 |13 17 60 40 1 29 |56 44  
 61--51-|-12-- 6---49--63--- 8 10 |



33 46 24 27 45 34 28 23  
 30 | 43 18 39 |  
 3-----54-----15-----58  
 241#  
 3-----64-----2-----61  
 |46 17 47 |20  
 58 51 5 16 59 50 8 13  
 |23 30---44---33---22---31---41---36  
 15 10 | 52 53 14 11 49 56 |  
 |34 39 29 28 35 38 |32 25  
 54--63-|- 9-- 4--55--62---12 1 |  
 27 18 40 45 26 19 37 48  
 6 | 57 7 60 |  
 43-----24-----42-----21

36 46 21 27 48 34 25 23  
 30 | 43 18 39 |  
 3-----54-----15-----58  
 242#  
 3-----64-----2-----61  
 |30 33 31 |36  
 58 51 5 16 59 50 8 13  
 |39 46---28---17---38---47---25---20  
 15 10 | 52 53 14 11 49 56 |  
 |18 23 45 44 19 22 |48 41  
 54--63-|- 9-- 4--55--62---12 1 |  
 43 34 24 29 42 35 21 32  
 6 | 57 7 60 |  
 27-----40-----26-----37

335#  
 3-----61-----36-----30  
 |46 20 13 51  
 54 23 12 41 21 56 43 10  
 |27 58---37-- 8---60--25--- 6--39  
 9 34 | 55 32 42 1 24 63 |  
 |40 15 26 49 7 48 |57 18  
 64--29-|- 2--35---31--62---33 4 |  
 17 52 47 14 50 19 16 45  
 44 | 22 11 53 |  
 5-----59-----38-----28

336#  
 3-----61-----36-----30  
 |46 20 13 51  
 54 17 12 47 21 50 43 16  
 |27 64---37-- 2---60--31--- 6--33  
 15 40 | 49 26 48 7 18 57 |  
 |34 9 32 55 1 42 |63 24  
 58--29-|- 8--35---25--62---39 4 |  
 23 52 41 14 56 19 10 45  
 44 | 22 11 53 |  
 5-----59-----38-----28

337#  
 4-----63-----1-----62  
 |45 18 48 |19  
 57 52 6 15 60 49 7 14  
 |24 29---43--34---21--32---42--35  
 16 9 | 51 54 13 12 50 55 |  
 |33 40 30 27 36 37 |31 26  
 53--64-|-10-- 3--56--61---11 2 |  
 28 17 39 46 25 20 38 47  
 5 | 58 8 59 |  
 44-----23-----41-----22

338#  
 4-----63-----1-----62  
 |29 34 32 |35  
 57 52 6 15 60 49 7 14  
 |40 45---27--18---37--48---26--19  
 16 9 | 51 54 13 12 50 55 |  
 |17 24 46 43 20 21 |47 42  
 53--64-|-10-- 3--56--61---11 2 |  
 44 33 23 30 41 36 22 31  
 5 | 58 8 59 |  
 28-----39-----25-----38

955#  
 26-----55-----9-----40  
 | 7 42 24 |57  
 47 62 2 19 64 45 17 4  
 |50 35---31--14---33--52---16--29  
 20 11 | 61 38 3 28 46 53 |  
 |13 22 36 59 30 5 |51 44  
 37--56-|-12--25---54--39---27 10 |  
 60 41 21 8 43 58 6 23  
 1 | 48 18 63 |  
 32-----49-----15-----34

956#  
 26-----55-----9-----40  
 | 7 42 24 |57  
 47 60 2 21 64 43 17 6  
 |50 37---31--12---33--54---16--27  
 22 13 | 59 36 5 30 44 51 |  
 |11 20 38 61 28 3 |53 46  
 35--56-|-14--25---52--39---29 10 |  
 62 41 19 8 45 58 4 23  
 1 | 48 18 63 |  
 32-----49-----15-----34

957#  
 26-----55-----12-----37  
 | 7 42 21 |60  
 47 62 2 19 61 48 20 1  
 |50 35---31--14---36--49---13--32  
 17 11 | 64 38 3 25 46 56 |  
 |16 22 33 59 30 8 |51 41  
 40--53-|- 9--28---54--39---27 10 |  
 57 44 24 5 43 58 6 23  
 4 | 45 18 63 |  
 29-----52-----15-----34

958#  
 26-----55-----12-----37  
 | 7 42 21 |60  
 47 57 2 24 61 43 20 6  
 |50 40---31-- 9---36--54---13--27  
 22 16 | 59 33 8 30 41 51 |  
 |11 17 38 64 25 3 |56 46  
 35--53-|-14--28---49--39---32 10 |  
 62 44 19 5 48 58 1 23  
 4 | 45 18 63 |  
 29-----52-----15-----34

959#  
 26-----55-----14-----35  
 | 7 42 19 |62  
 47 60 2 21 59 48 22 1

960#  
 26-----55-----14-----35  
 | 7 42 19 |62  
 47 57 2 24 59 45 22 4

50 37---31--12---38--49---11--32 17 13   64 36 5 25 44 56    16 20 33 61 28 8  53 41 40--51-  9--30---52--39---29 10   57 46 24 3 45 58 4 23 6   43 18 63   27-----54-----15-----34	50 40---31-- 9---38--52---11--29 20 16   61 33 8 28 41 53    13 17 36 64 25 5  56 44 37--51- -12--30---49--39---32 10   60 46 21 3 48 58 1 23 6   43 18 63   27-----54-----15-----34
---	--

[Counts(Old/New) = 960/960]

\*\* Monitor List of Solution Correspondences between Old and New \*\*

```
??: 0
1: 11111111111111111111111111111111111111111111111111111111111111111111
65: 11111111111111111111111111111111111111111111111111111111111111111111
129: 11111111111111111111111111111111111111111111111111111111111111111111
193: 11111111111111111111111111111111111111111111111111111111111111111111
257: 11111111111111111111111111111111111111111111111111111111111111111111
321: 11111111111111111111111111111111111111111111111111111111111111111111
385: 11111111111111111111111111111111111111111111111111111111111111111111
449: 11111111111111111111111111111111111111111111111111111111111111111111
513: 11111111111111111111111111111111111111111111111111111111111111111111
577: 11111111111111111111111111111111111111111111111111111111111111111111
641: 11111111111111111111111111111111111111111111111111111111111111111111
705: 11111111111111111111111111111111111111111111111111111111111111111111
769: 11111111111111111111111111111111111111111111111111111111111111111111
833: 11111111111111111111111111111111111111111111111111111111111111111111
897: 11111111111111111111111111111111111111111111111111111111111111111111
```

[OK!]

\*\* Recompiled and Listed by Kanji Setsuda on  
March 5, 2015 with MacOSX 10.10.2 & Xcode 6.1.1 \*\*

The result shows our success. Each solution is really a 'Composite and Complete' Magic Cube of order 4<sup>3</sup> and it is always found in the old list of solutions I got before without any exceptions. We could not make any other type of solutions. We could make neither duplications nor drop-offs of any solution at all.

The count 960 of 'standard' solutions of 3-dimensional cubes is logically equivalent to the count 46080 of 'primitive' ones, because 46080 = 960 x 48.

It is amazing we could make all of them by this simple method directly from the Basic View-forms of ECO2<sup>6</sup>. But why could we do that? What makes it possible?

### #3. How to Compose Multiple Type of 'C&C' Magic Squares 8<sup>2</sup>

Let's compose 'Multiple' Type of 'C&C' MS88 including 4 little squares of 4x4 within, whose rows and columns always add up to the same sum, half of the magic constant.

We want to make the 'standard' solutions of that type by our newest method.

We know this goal object has 5760 'standard' solutions, logically equivalent to 46080 'primitive' solutions, because 46080 = 5760 x 8.

What do we have to do, then?

We only have to change a few procedures in the previous program.

(0) We don't want to change anything about the making process of all view-forms of developed ECO2<sup>6</sup>. We want to have the same process in common.

(1) We have to change a little about the selection process of 5760 standard solutions of 2-dimensional squares from the set of 46080 'primitive' solutions. We have to do that job by the new 'Normalizing Inequality Conditions':

```
n1<n31; n1<n44; n1<n54; and n63>n60;
```

(They are equivalent to n1<n8; n1<n57; n1<n64; and n2>n9; in the BD/)

						BD/	/Model								
1	2	3	4	5	6	7	8	1	63	4	62	36	30	33	31
9	10	11	12	13	14	15	16	60	6	57	7	25	39	28	38
17	18	19	20	21	22	23	24	13	51	16	50	48	18	45	19
25	26	27	28	29	30	31	32	56	10	53	11	21	43	24	42
33	34	35	36	37	38	39	40	29	35	32	34	64	2	61	3
41	42	43	44	45	46	47	48	40	26	37	27	5	59	8	58
49	50	51	52	53	54	55	56	17	47	20	46	52	14	49	15
57	58	59	60	61	62	63	64	44	22	41	23	9	55	12	54

- (2) We have to change only a little about the 'Model' and the 'DAM Transformation'.  
 We would like to dictate such a simple transformation program as listed below.
- (3) You may well add anything like a 'sort' program, if necessary.

```

/** 'Composite and Complete' Magic Squares 8^2 by the New Composing Method **
/** Using All Possible View-Forms of Developed E.C.Objects of Order 2^6: **
/** The 5760 Standard Solutions of the Multiple 4^2 type of 'C&C' MS88; **
/** File: 'NewECMS8CC.c' Dictated by Kanji Setsuda in 2005, 2006 and 2008; **
/** Recompiled on March 5, 2015 with MacOSX 10.10.2 & Xcode 6.1.1 **
//
#include <stdio.h>
//
/** Variables *
long int tcnt;
short cnt;
short vc, pc;
short tv[65][6];
short td[721][6];
short tnm[46081][66];
//
/** Sub-Routines 1 *
void mkfv26(void), prmt26(void);
void d26(short x, short y);
void trnsfcc(void);
void mksol26(void);
void srt26(void), exc26(short x);
void prms8(short x, short y);
//
/** Main Program *
int main(){
long int mm;
short m,n,stm,lsn;
printf("\n");
printf("** Multiple 4^2 type of 'Composite & Complete' Magic Squares of Order 8 by \n");
printf(" the New Method Using All View-Forms of Developed Extra-Cubic Objects 2^6 **\n");
printf("** Compact List of the 5760 Standard Solutions composed(Part) **\n");
vc=0; mkfv26();
pc=0; prmt26();
tcnt=vc*pc;
for(m=0;m<vc;m++){for(n=0;n<pc;n++){d26(m,n);}}
trnsfcc();
cnt=0;
for(mm=0;mm<tcnt;mm++){
if((tnm[mm][1]<tnm[mm][8])&&(tnm[mm][1]<tnm[mm][57])&&(tnm[mm][1]<tnm[mm][64])){
if(tnm[mm][2]>tnm[mm][9]){
tnm[cnt][0]=mm+1;
for(n=1;n<65;n++){tnm[cnt][n]=tnm[mm][n];}
tnm[cnt][65]=0;
cnt++;}}
}
for(n=0;n<65;n++){tnm[cnt][n]=0;}
tcnt=cnt;

```



```

        uflg[d2]=0;
    }}
    uflg[d1]=0;
}}
    uflg[d0]=0;
}
}
//
void d26(short x, short y){
    short d0,d1,d2,d3,d4,d5;
    short t0,t1,t2,t3,t4,t5;
    short c;
    short s[6], cd[2][2];
    cd[0][0]=0; cd[0][1]=1; cd[1][0]=1; cd[1][1]=0;
    c=0;
    for(d0=0;d0<2;d0++){
        for(d1=0;d1<2;d1++){
            for(d2=0;d2<2;d2++){
                for(d3=0;d3<2;d3++){
                    for(d4=0;d4<2;d4++){
                        for(d5=0;d5<2;d5++){c++;
                            s[0]=cd[tv[x][0]][d0]; s[1]=cd[tv[x][1]][d1]; s[2]=cd[tv[x][2]][d2];
                            s[3]=cd[tv[x][3]][d3]; s[4]=cd[tv[x][4]][d4]; s[5]=cd[tv[x][5]][d5];
                            t0=td[y][0]; t1=td[y][1]; t2=td[y][2]; t3=td[y][3]; t4=td[y][4]; t5=td[y][5];
                            tnm[x*pc+y][c]=((((s[t0]*2+s[t1])*2+s[t2])*2+s[t3])*2+s[t4])*2+s[t5]+1;
                        }}
                    }}
                }}
            }}
        }}
    }
}
//
/** Transform the Answer after the Model and Record the Result *
// 1-----63----- 4-----62          * Model Solution *
// | 48          18          45          | 19          1 63 4 62 36 30 33 31
// 60  49    6  15  57  52  7  14      60  6 57 7 25 39 28 38
// | 21    32---43---34---24---29---+42---35 13 51 16 50 48 18 45 19
// 13  12 | 51    54    16    9    50    55 | 56 10 53 11 21 43 24 42
// | 36  37  30  27  33  40 | 31  26      29 35 32 34 64 2 61 3
// 56---61--|10--- 3---53---64---11    2 | 40 26 37 27 5 59 8 58
//    25  20  39  46  28  17  38  47      17 47 20 46 52 14 49 15
//          8 |    58          5          59 | 44 22 41 23 9 55 12 54
//          41-----23-----44-----22
//
void trnsfcc(){
    long int m;
    short n,nm[65];
    for(m=0;m<tcnt;m++){
        nm[0]=m+1;
        nm[1]=tnm[m][1];    nm[2]=tnm[m][63];    nm[3]=tnm[m][4];    nm[4]=tnm[m][62];
        nm[5]=tnm[m][36];    nm[6]=tnm[m][30];    nm[7]=tnm[m][33];    nm[8]=tnm[m][31];
        nm[9]=tnm[m][60];    nm[10]=tnm[m][6];    nm[11]=tnm[m][57];    nm[12]=tnm[m][7];
        nm[13]=tnm[m][25];    nm[14]=tnm[m][39];    nm[15]=tnm[m][28];    nm[16]=tnm[m][38];
        nm[17]=tnm[m][13];    nm[18]=tnm[m][51];    nm[19]=tnm[m][16];    nm[20]=tnm[m][50];
        nm[21]=tnm[m][48];    nm[22]=tnm[m][18];    nm[23]=tnm[m][45];    nm[24]=tnm[m][19];
        nm[25]=tnm[m][56];    nm[26]=tnm[m][10];    nm[27]=tnm[m][53];    nm[28]=tnm[m][11];
        nm[29]=tnm[m][21];    nm[30]=tnm[m][43];    nm[31]=tnm[m][24];    nm[32]=tnm[m][42];
        nm[33]=tnm[m][29];    nm[34]=tnm[m][35];    nm[35]=tnm[m][32];    nm[36]=tnm[m][34];
        nm[37]=tnm[m][64];    nm[38]=tnm[m][2];    nm[39]=tnm[m][61];    nm[40]=tnm[m][3];
        nm[41]=tnm[m][40];    nm[42]=tnm[m][26];    nm[43]=tnm[m][37];    nm[44]=tnm[m][27];
        nm[45]=tnm[m][5];    nm[46]=tnm[m][59];    nm[47]=tnm[m][8];    nm[48]=tnm[m][58];
        nm[49]=tnm[m][17];    nm[50]=tnm[m][47];    nm[51]=tnm[m][20];    nm[52]=tnm[m][46];
        nm[53]=tnm[m][52];    nm[54]=tnm[m][14];    nm[55]=tnm[m][49];    nm[56]=tnm[m][15];
        nm[57]=tnm[m][44];    nm[58]=tnm[m][22];    nm[59]=tnm[m][41];    nm[60]=tnm[m][23];
        nm[61]=tnm[m][9];    nm[62]=tnm[m][55];    nm[63]=tnm[m][12];    nm[64]=tnm[m][54];
        for(n=0;n<65;n++){tnm[m][n]=nm[n];}
    }
}

```

```

}
}
//
/** Sort the Solutions according to n1,n2,n4,n9, n25 and n49 *
void srt26(void){
short m,n,f;
long d1,d2,d3,d4;
m=tcnt;
do{f=0; m--;
for(n=0;n<m;n++){
if(tnm[n][1]>tnm[n+1][1]){exc26(n); f=1;}
else{d1=tnm[n][2]*65+tnm[n][4]; d2=tnm[n+1][2]*65+tnm[n+1][4];
if((tnm[n][1]==tnm[n+1][1])&&(d1<d2)){exc26(n); f=1;}
else{d3=tnm[n][9]*65+tnm[n][25]; d4=tnm[n+1][9]*65+tnm[n+1][25];
if((tnm[n][1]==tnm[n+1][1])&&(d1==d2)&&(d3<d4)){exc26(n); f=1;}
else if((tnm[n][1]==tnm[n+1][1])&&(d1==d2)&&(d3==d4)&&(tnm[n][49]>tnm[n+1][49])){
exc26(n); f=1;}
}
}
}
}while(f>0);
}
//
/** Exchange solution pairs according to their own values *
void exc26(short x){
short p,sv;
for(p=0;p<65;p++){sv=tnm[x][p]; tnm[x][p]=tnm[x+1][p]; tnm[x+1][p]=sv;}
}
//
/** Print 3 Pieces of 'C&C' MS88 *
void prms8(short x, short y){
short l,l8,m,n,p;
for(m=x-1;m<y;m=m+3){
for(n=0;n<3;n++){
if(m+n<y){printf("%24d#",m+n+1);}
if(n<2){printf(" ");}
}
printf("\n");
for(l=0;l<8;l++){l8=l*8;
for(n=0;n<3;n++){
if(m+n<y){printf(" ");
for(p=1;p<9;p++){printf("%3d",tnm[m+n][l8+p]);}
if(n<2){printf(" ");}
}
}
printf("\n");
}
}
}
//

```

**\*\* Multiple 4<sup>2</sup> type of 'Composite & Complete' Magic Squares of Order 8 by  
the New Method Using All View-Forms of Developed Extra-Cubic Objects 2<sup>16</sup> \*\***  
**\*\* Compact List of the 5760 Standard Solutions composed(Part) \*\***

								1#									2#									3#																																																																																																																																																																					
1	63	4	62	36	30	33	31	1	63	4	62	20	46	17	47	1	63	4	62	36	30	33	31	60	6	57	7	25	39	28	38	60	6	57	7	41	23	44	22	60	6	57	7	25	39	28	38	13	51	16	50	48	18	45	19	13	51	16	50	32	34	29	35	21	43	24	42	56	10	53	11	56	10	53	11	21	43	24	42	56	10	53	11	37	27	40	26	48	18	45	19	13	51	16	50	29	35	32	34	64	2	61	3	45	19	48	18	64	2	61	3	29	35	32	34	64	2	61	3	40	26	37	27	5	59	8	58	24	42	21	43	5	59	8	58	40	26	37	27	5	59	8	58	17	47	20	46	52	14	49	15	33	31	36	30	52	14	49	15	9	55	12	54	44	22	41	23	44	22	41	23	9	55	12	54	28	38	25	39	9	55	12	54	52	14	49	15	17	47	20	46



<p style="text-align: center;">22#</p> <p>1 63 4 62 8 58 5 59  32 34 29 35 25 39 28 38  41 23 44 22 48 18 45 19  56 10 53 11 49 15 52 14  57 7 60 6 64 2 61 3  40 26 37 27 33 31 36 30  17 47 20 46 24 42 21 43  16 50 13 51 9 55 12 54</p> <p style="text-align: center;">25#</p> <p>1 63 6 60 38 28 33 31  62 4 57 7 25 39 30 36  11 53 16 50 48 18 43 21  56 10 51 13 19 45 24 42  27 37 32 34 64 2 59 5  40 26 35 29 3 61 8 58  17 47 22 44 54 12 49 15  46 20 41 23 9 55 14 52</p> <p style="text-align: center;">28#</p> <p>1 63 6 60 14 52 9 55  62 4 57 7 49 15 54 12  19 45 24 42 32 34 27 37  48 18 43 21 35 29 40 26  51 13 56 10 64 2 59 5  16 50 11 53 3 61 8 58  33 31 38 28 46 20 41 23  30 36 25 39 17 47 22 44</p> <p style="text-align: center;">31#</p> <p>1 63 6 60 38 28 33 31  56 10 51 13 19 45 24 42  11 53 16 50 48 18 43 21  62 4 57 7 25 39 30 36  27 37 32 34 64 2 59 5  46 20 41 23 9 55 14 52  17 47 22 44 54 12 49 15  40 26 35 29 3 61 8 58</p> <p style="text-align: center;">34#</p> <p>1 63 6 60 8 58 3 61  56 10 51 13 49 15 54 12  25 39 30 36 32 34 27 37  48 18 43 21 41 23 46 20  57 7 62 4 64 2 59 5  16 50 11 53 9 55 14 52  33 31 38 28 40 26 35 29  24 42 19 45 17 47 22 44</p> <p style="text-align: center;">358#</p> <p>1 48 25 56 26 55 2 47  32 49 8 41 7 42 31 50  35 14 59 22 60 21 36 13  62 19 38 11 37 12 61 20  39 10 63 18 64 17 40 9  58 23 34 15 33 16 57 24  5 44 29 52 30 51 6 43  28 53 4 45 3 46 27 54</p> <p style="text-align: center;">361#</p> <p>2 64 3 61 35 29 34 32  59 5 58 8 26 40 27 37  14 52 15 49 47 17 46 20  55 9 54 12 22 44 23 41  30 36 31 33 63 1 62 4  39 25 38 28 6 60 7 57  18 48 19 45 51 13 50 16  43 21 42 24 10 56 11 53</p>	<p style="text-align: center;">23#</p> <p>1 63 4 62 12 54 9 55  32 34 29 35 21 43 24 42  49 15 52 14 60 6 57 7  48 18 45 19 37 27 40 26  53 11 56 10 64 2 61 3  44 22 41 23 33 31 36 30  5 59 8 58 16 50 13 51  28 38 25 39 17 47 20 46</p> <p style="text-align: center;">26#</p> <p>1 63 6 60 22 44 17 47  62 4 57 7 41 23 46 20  11 53 16 50 32 34 27 37  56 10 51 13 35 29 40 26  43 21 48 18 64 2 59 5  24 42 19 45 3 61 8 58  33 31 38 28 54 12 49 15  30 36 25 39 9 55 14 52</p> <p style="text-align: center;">29#</p> <p>1 63 6 60 22 44 17 47  62 4 57 7 41 23 46 20  35 29 40 26 56 10 51 13  32 34 27 37 11 53 16 50  43 21 48 18 64 2 59 5  24 42 19 45 3 61 8 58  9 55 14 52 30 36 25 39  54 12 49 15 33 31 38 28</p> <p style="text-align: center;">32#</p> <p>1 63 6 60 22 44 17 47  56 10 51 13 35 29 40 26  11 53 16 50 32 34 27 37  62 4 57 7 41 23 46 20  43 21 48 18 64 2 59 5  30 36 25 39 9 55 14 52  33 31 38 28 54 12 49 15  24 42 19 45 3 61 8 58</p> <p style="text-align: center;">35#</p> <p>1 63 6 60 22 44 17 47  56 10 51 13 35 29 40 26  41 23 46 20 62 4 57 7  32 34 27 37 11 53 16 50  43 21 48 18 64 2 59 5  30 36 25 39 9 55 14 52  3 61 8 58 24 42 19 45  54 12 49 15 33 31 38 28</p> <p style="text-align: center;">359#</p> <p>1 48 25 56 27 54 3 46  32 49 8 41 6 43 30 51  37 12 61 20 63 18 39 10  60 21 36 13 34 15 58 23  38 11 62 19 64 17 40 9  59 22 35 14 33 16 57 24  2 47 26 55 28 53 4 45  31 50 7 42 5 44 29 52</p> <p style="text-align: center;">362#</p> <p>2 64 3 61 19 45 18 48  59 5 58 8 42 24 43 21  14 52 15 49 31 33 30 36  55 9 54 12 38 28 39 25  46 20 47 17 63 1 62 4  23 41 22 44 6 60 7 57  34 32 35 29 51 13 50 16  27 37 26 40 10 56 11 53</p>	<p style="text-align: center;">24#</p> <p>1 63 4 62 8 58 5 59  32 34 29 35 25 39 28 38  49 15 52 14 56 10 53 11  48 18 45 19 41 23 44 22  57 7 60 6 64 2 61 3  40 26 37 27 33 31 36 30  9 55 12 54 16 50 13 51  24 42 21 43 17 47 20 46</p> <p style="text-align: center;">27#</p> <p>1 63 6 60 38 28 33 31  62 4 57 7 25 39 30 36  19 45 24 42 56 10 51 13  48 18 43 21 11 53 16 50  27 37 32 34 64 2 59 5  40 26 35 29 3 61 8 58  9 55 14 52 46 20 41 23  54 12 49 15 17 47 22 44</p> <p style="text-align: center;">30#</p> <p>1 63 6 60 14 52 9 55  62 4 57 7 49 15 54 12  35 29 40 26 48 18 43 21  32 34 27 37 19 45 24 42  51 13 56 10 64 2 59 5  16 50 11 53 3 61 8 58  17 47 22 44 30 36 25 39  46 20 41 23 33 31 38 28</p> <p style="text-align: center;">33#</p> <p>1 63 6 60 38 28 33 31  56 10 51 13 19 45 24 42  25 39 30 36 62 4 57 7  48 18 43 21 11 53 16 50  27 37 32 34 64 2 59 5  46 20 41 23 9 55 14 52  3 61 8 58 40 26 35 29  54 12 49 15 17 47 22 44</p> <p style="text-align: center;">36#</p> <p>1 63 6 60 8 58 3 61  56 10 51 13 49 15 54 12  41 23 46 20 48 18 43 21  32 34 27 37 25 39 30 36  57 7 62 4 64 2 59 5  16 50 11 53 9 55 14 52  17 47 22 44 24 42 19 45  40 26 35 29 33 31 38 28</p> <p style="text-align: center;">363#</p> <p>2 64 3 61 35 29 34 32  59 5 58 8 26 40 27 37  22 44 23 41 55 9 54 12  47 17 46 20 14 52 15 49  30 36 31 33 63 1 62 4  39 25 38 28 6 60 7 57  10 56 11 53 43 21 42 24  51 13 50 16 18 48 19 45</p>
---	---	--

. . . . .



2 47 26 55 25 56 1 48	2 47 26 55 28 53 4 45	2 47 26 55 25 56 1 48
31 50 7 42 8 41 32 49	31 50 7 42 5 44 29 52	31 50 7 42 8 41 32 49
36 13 60 21 59 22 35 14	38 11 62 19 64 17 40 9	38 11 62 19 61 20 37 12
61 20 37 12 38 11 62 19	59 22 35 14 33 16 57 24	59 22 35 14 36 13 60 21
40 9 64 17 63 18 39 10	37 12 61 20 63 18 39 10	40 9 64 17 63 18 39 10
57 24 33 16 34 15 58 23	60 21 36 13 34 15 58 23	57 24 33 16 34 15 58 23
6 43 30 51 29 52 5 44	1 48 25 56 27 54 3 46	4 45 28 53 27 54 3 46
27 54 3 46 4 45 28 53	32 49 8 41 6 43 30 51	29 52 5 44 6 43 30 51
718#	719#	720#
3 64 2 61 34 29 35 32	3 64 2 61 18 45 19 48	3 64 2 61 34 29 35 32
58 5 59 8 27 40 26 37	58 5 59 8 43 24 42 21	58 5 59 8 27 40 26 37
15 52 14 49 46 17 47 20	15 52 14 49 30 33 31 36	23 44 22 41 54 9 55 12
54 9 55 12 23 44 22 41	54 9 55 12 39 28 38 25	46 17 47 20 15 52 14 49
31 36 30 33 62 1 63 4	47 20 46 17 62 1 63 4	31 36 30 33 62 1 63 4
38 25 39 28 7 60 6 57	22 41 23 44 7 60 6 57	38 25 39 28 7 60 6 57
19 48 18 45 50 13 51 16	35 32 34 29 50 13 51 16	11 56 10 53 42 21 43 24
42 21 43 24 11 56 10 53	26 37 27 40 11 56 10 53	50 13 51 16 19 48 18 45
721#	722#	723#
3 46 27 54 25 56 1 48	4 63 1 62 33 30 36 31	4 63 1 62 17 46 20 47
30 51 6 43 8 41 32 49	57 6 60 7 28 39 25 38	57 6 60 7 44 23 41 22
39 10 63 18 61 20 37 12	16 51 13 50 45 18 48 19	16 51 13 50 29 34 32 35
58 23 34 15 36 13 60 21	53 10 56 11 24 43 21 42	53 10 56 11 40 27 37 26
40 9 64 17 62 19 38 11	32 35 29 34 61 2 64 3	48 19 45 18 61 2 64 3
57 24 33 16 35 14 59 22	37 26 40 27 8 59 5 58	21 42 24 43 8 59 5 58
4 45 28 53 26 55 2 47	20 47 17 46 49 14 52 15	36 31 33 30 49 14 52 15
29 52 5 44 7 42 31 50	41 22 44 23 12 55 9 54	25 38 28 39 12 55 9 54
1080#	1081#	1082#
4 45 28 53 26 55 2 47	5 64 2 59 34 27 37 32	5 64 2 59 18 43 21 48
29 52 5 44 7 42 31 50	58 3 61 8 29 40 26 35	58 3 61 8 45 24 42 19
40 9 64 17 62 19 38 11	15 54 12 49 44 17 47 22	15 54 12 49 28 33 31 38
57 24 33 16 35 14 59 22	52 9 55 14 23 46 20 41	52 9 55 14 39 30 36 25
39 10 63 18 61 20 37 12	31 38 28 33 60 1 63 6	47 22 44 17 60 1 63 6
58 23 34 15 36 13 60 21	36 25 39 30 7 62 4 57	20 41 23 46 7 62 4 57
3 46 27 54 25 56 1 48	21 48 18 43 50 11 53 16	37 32 34 27 50 11 53 16
30 51 6 43 8 41 32 49	42 19 45 24 13 56 10 51	26 35 29 40 13 56 10 51
1440#	1441#	1442#
24 42 31 33 27 37 20 46	24 42 55 9 53 11 22 44	24 42 55 9 51 13 20 46
9 55 2 64 6 60 13 51	33 31 2 64 4 62 35 29	33 31 2 64 6 60 37 27
54 12 61 3 57 7 50 16	16 50 47 17 45 19 14 52	16 50 47 17 43 21 12 54
43 21 36 30 40 26 47 17	57 7 26 40 28 38 59 5	57 7 26 40 30 36 61 3
38 28 45 19 41 23 34 32	12 54 43 21 41 23 10 56	14 52 45 19 41 23 10 56
59 5 52 14 56 10 63 1	61 3 30 36 32 34 63 1	59 5 28 38 32 34 63 1
8 58 15 49 11 53 4 62	20 46 51 13 49 15 18 48	22 44 53 11 49 15 18 48
25 39 18 48 22 44 29 35	37 27 6 60 8 58 39 25	35 29 4 62 8 58 39 25
5752#	5753#	5754#
24 33 28 45 27 46 23 34	24 33 28 45 26 47 22 35	24 33 30 43 29 44 23 34
9 64 5 52 6 51 10 63	9 64 5 52 7 50 11 62	9 64 3 54 4 53 10 63
54 3 58 15 57 16 53 4	55 2 59 14 57 16 53 4	52 5 58 15 57 16 51 6
43 30 39 18 40 17 44 29	42 31 38 19 40 17 44 29	45 28 39 18 40 17 46 27
38 19 42 31 41 32 37 20	39 18 43 30 41 32 37 20	36 21 42 31 41 32 35 22
59 14 55 2 56 1 60 13	58 15 54 3 56 1 60 13	61 12 55 2 56 1 62 11
8 49 12 61 11 62 7 50	8 49 12 61 10 63 6 51	8 49 14 59 13 60 7 50
25 48 21 36 22 35 26 47	25 48 21 36 23 34 27 46	25 48 19 38 20 37 26 47
5755#	5756#	5757#
24 33 30 43 26 47 20 37	24 33 31 42 29 44 22 35	24 33 31 42 27 46 20 37
9 64 3 54 7 50 13 60	9 64 2 55 4 53 11 62	9 64 2 55 6 51 13 60
55 2 61 12 57 16 51 6	52 5 59 14 57 16 50 7	54 3 61 12 57 16 50 7
42 31 36 21 40 17 46 27	45 28 38 19 40 17 47 26	43 30 36 21 40 17 47 26
39 18 45 28 41 32 35 22	36 21 43 30 41 32 34 23	38 19 45 28 41 32 34 23
58 15 52 5 56 1 62 11	61 12 54 3 56 1 63 10	59 14 52 5 56 1 63 10
8 49 14 59 10 63 4 53	8 49 15 58 13 60 6 51	8 49 15 58 11 62 4 53
25 48 19 38 23 34 29 44	25 48 18 39 20 37 27 46	25 48 18 39 22 35 29 44
5758#	5759#	5760#





- (1) We have to change the selecting process of 'standard' solutions of 2-dimensional squares from the set of 'primitive' solutions. We have to do that job by the new 'Normalizing Inequality Conditions':  $n_1 < n_8$ ;  $n_1 < n_{57}$ ;  $n_1 < n_{64}$ ; and  $n_{63} > n_{56}$ ;  
(They are equivalent to  $n_1 < n_8$ ;  $n_1 < n_{57}$ ;  $n_1 < n_{64}$ ; and  $n_2 > n_9$ ; in the BD/)
- (2) We have to change the 'Model' solution for the 'DAM Transformation'.  
We would like to dictate such a simple transformation program as listed below.

**\*\* Concept of 'DAM Transformation' \*\***

								BD/	/Model							
1	2	3	4	5	6	7	8	1	63	4	62	6	60	7	57	
9	10	11	12	13	14	15	16	56	10	53	11	51	13	50	16	
17	18	19	20	21	22	23	24	25	39	28	38	30	36	31	33	
25	26	27	28	29	30	31	32	48	18	45	19	43	21	42	24	
33	34	35	36	37	38	39	40	41	23	44	22	46	20	47	17	
41	42	43	44	45	46	47	48	32	34	29	35	27	37	26	40	
49	50	51	52	53	54	55	56	49	15	52	14	54	12	55	9	
57	58	59	60	61	62	63	64	8	58	5	59	3	61	2	64	

- (3) You may well add anything like a 'sort' program, if necessary.

```

/** Compose the Extra-Cubic Magic Objects of Order 2^6 and **
/** Transform into '4-Type Simultaneous' Magic Squares 8^2: **
/** Multiple, 'Composite', Self-complementary and Pan-diagonal; **
/** File: 'NewECMS8Sml.c' Dictated by Kanji Setsuda **
/** on Sep.28, 2005 and Aug.17, 2006; Recompiled **
/** on March 5, 2015 MacOSX 10.10.2 & Xcode 6.1.1 **
//
/** Definitions of Basic Diagrams for EC02^6 *
// Type 0/2^6
// 1---- 2      3---- 4      33----34      35----36
// | 5--+- 6 | 7--+- 8 | 37--+-38 | 39--+-40
// 9--|-10 | 11--|-12 | 41--|-42 | 43--|-44 |
// 13----14      15----16      45----46      47----48
//
// 17----18      19----20      49----50      51----52
// | 21--+-22 | 23--+-24 | 53--+-54 | 55--+-56
// 25--|-26 | 27--|-28 | 57--|-58 | 59--|-60 |
// 29----30      31----32      61----62      63----64
//
// 1----- 2----- 3----- 4          SC4^3/8^2
// | 5          6          7          | 8          1 2 3 4 5 6 7 8
// 9 33 10 34 11 35 12 36          9 10 11 12 13 14 15 16
// | 13 37----14----38----15----39--+-16----40 17 18 19 20 21 22 23 24
// 17 41 | 18 42 19 43 20 44 | 25 26 27 28 29 30 31 32
// | 21 45 22 46 23 47 | 24 48 33 34 35 36 37 38 39 40
// 25----49--|-26----50----27----51----28 52 | 41 42 43 44 45 46 47 48
// 29 53 30 54 31 55 32 56 49 50 51 52 53 54 55 56
// 57 | 58 59 60 | 57 58 59 60 61 62 63 64
// 61-----62-----63-----64
//
#include <stdio.h>
//
/** Variables *
long int tcnt;
short vc, pc, cnt;
short tv[65][6];
short td[721][6];
int tnm[46081][65];
short nm[65];
//
/** Sub-Routines #2 *

```

```

void mkfv26(void), prmt26(void);
void d26(short x, short y);
void mksol26(void);
void srt26(void), exc26(short x);
void prms8(short x, short y);
void prms8d2i(short x, short y);
//
/* Main Program *
int main(){
  int mm;
  short m,n;
  printf("\n");
  printf("*** Composition of the 4-Type Simultaneous Magic Squares 8x8 **\n");
  printf("*** by our Newest Method using all possible View-Forms of **\n");
  printf("*** the Developed Extra-Cubic Objects of Order 2^6 **\n");
  vc=0; mkfv26();
  pc=0; prmt26();
  tcnt=vc*pc;
  for(m=0;m<vc;m++){for(n=0;n<pc;n++){d26(m,n);}}
  cnt=0;
  for(mm=0;mm<tcnt;mm++){
    if((tnm[mm][1]<tnm[mm][45])&&(tnm[mm][1]<tnm[mm][20])&&(tnm[mm][1]<tnm[mm][64])){
      if(tnm[mm][63]>tnm[mm][60]){
        tnm[cnt][0]=mm+1;
        for(n=1;n<65;n++){tnm[cnt][n]=tnm[mm][n];}
        cnt++;}
    }
  }
  for(n=0;n<65;n++){tnm[cnt][n]=0;}
  tcnt=cnt;
  mksol26();
  srt26();
  printf("\n");
  printf("*** List of the Standard Solutions of '4-Type Simultaneous' MS88:\n");
  printf("  Multiple, 'Composite', Self-complementary and Pan-diagonal; **\n");
  prms8d2i(1,6);
  prms8(7,72);
  printf(" . . . . .\n");
  prms8(358,366);
  printf(" . . . . .\n");
  prms8(718,726);
  printf(" . . . . .\n");
  prms8(1078,1086);
  printf(" . . . . .\n");
  prms8(tcnt-11,tcnt);
  printf(" [Count = %d] OK!\n",cnt);
  printf("\n");
  printf("*** Recompiled and Listed by Kanji Setsuda on\n");
  printf("  March 5, 2015 with MacOSX 10.10.2 & Xcode 6.1.1 **\n");
  printf("\n");
  return 0;
}
//
/* Sub-Procedures for Extra-Cubic Objects of Order 2^6 *
void mkfv26(){
  short d0,d1,d2,d3,d4,d5;
  for(d0=0;d0<2;d0++){
    for(d1=0;d1<2;d1++){
      for(d2=0;d2<2;d2++){
        for(d3=0;d3<2;d3++){
          for(d4=0;d4<2;d4++){
            for(d5=0;d5<2;d5++){
              tv[vc][0]=d0; tv[vc][1]=d1; tv[vc][2]=d2;
              tv[vc][3]=d3; tv[vc][4]=d4; tv[vc][5]=d5;
              vc++;
            }
          }
        }
      }
    }
  }
}

```

```

    }
  }
}
//
void prmt26(void){
  short d0,d1,d2,d3,d4,d5,n;
  short uflg[6];
  for(n=0;n<6;n++){uflg[n]=0;}
  for(d0=0;d0<6;d0++){
    uflg[d0]=1;
    for(d1=0;d1<6;d1++){
      if(uflg[d1]==0){uflg[d1]=1;
        for(d2=0;d2<6;d2++){
          if(uflg[d2]==0){uflg[d2]=1;
            for(d3=0;d3<6;d3++){
              if(uflg[d3]==0){uflg[d3]=1;
                for(d4=0;d4<6;d4++){
                  if(uflg[d4]==0){uflg[d4]=1;
                    for(d5=0;d5<6;d5++){
                      if(uflg[d5]==0){uflg[d5]=1;
                        td[pc][0]=d0; td[pc][1]=d1; td[pc][2]=d2;
                        td[pc][3]=d3; td[pc][4]=d4; td[pc][5]=d5;
                        pc++;
                        uflg[d5]=0;
                      }}
                    uflg[d4]=0;
                  }}
                uflg[d3]=0;
              }}
            uflg[d2]=0;
          }}
        uflg[d1]=0;
      }}
    uflg[d0]=0;
  }
}
//
void d26(short x, short y){
  short d0,d1,d2,d3,d4,d5;
  short t0,t1,t2,t3,t4,t5;
  short c;
  short s[6], cd[2][2];
  cd[0][0]=0; cd[0][1]=1; cd[1][0]=1; cd[1][1]=0;
  c=0;
  for(d0=0;d0<2;d0++){
    for(d1=0;d1<2;d1++){
      for(d2=0;d2<2;d2++){
        for(d3=0;d3<2;d3++){
          for(d4=0;d4<2;d4++){
            for(d5=0;d5<2;d5++){c++;
              s[0]=cd[tv[x][0]][d0]; s[1]=cd[tv[x][1]][d1]; s[2]=cd[tv[x][2]][d2];
              s[3]=cd[tv[x][3]][d3]; s[4]=cd[tv[x][4]][d4]; s[5]=cd[tv[x][5]][d5];
              t0=td[y][0]; t1=td[y][1]; t2=td[y][2]; t3=td[y][3]; t4=td[y][4]; t5=td[y][5];
              tnm[x*pc+y][c]=((((s[t0]*2+s[t1])*2+s[t2])*2+s[t3])*2+s[t4])*2+s[t5]+1;
            }}
          }}
        }}
      }}
    }}
  }
}
//
/* Transform the Answer after the Model and Save the Result *
/** "Do-it-After-the-Model Transformation" **
void mkso126(void){

```

```

short m,n;
for(m=0;m<tcnt;m++){
    nm[0]=m+1;
    nm[1]=tnm[m][1];    nm[2]=tnm[m][63];    nm[3]=tnm[m][4];    nm[4]=tnm[m][62];
    nm[5]=tnm[m][18];   nm[6]=tnm[m][48];   nm[7]=tnm[m][19];   nm[8]=tnm[m][45];
    nm[9]=tnm[m][60];   nm[10]=tnm[m][6];   nm[11]=tnm[m][57];  nm[12]=tnm[m][7];
    nm[13]=tnm[m][43];  nm[14]=tnm[m][21];  nm[15]=tnm[m][42];  nm[16]=tnm[m][24];
    nm[17]=tnm[m][13];  nm[18]=tnm[m][51];  nm[19]=tnm[m][16];  nm[20]=tnm[m][50];
    nm[21]=tnm[m][30];  nm[22]=tnm[m][36];  nm[23]=tnm[m][31];  nm[24]=tnm[m][33];
    nm[25]=tnm[m][56];  nm[26]=tnm[m][10];  nm[27]=tnm[m][53];  nm[28]=tnm[m][11];
    nm[29]=tnm[m][39];  nm[30]=tnm[m][25];  nm[31]=tnm[m][38];  nm[32]=tnm[m][28];
    nm[33]=tnm[m][37];  nm[34]=tnm[m][27];  nm[35]=tnm[m][40];  nm[36]=tnm[m][26];
    nm[37]=tnm[m][54];  nm[38]=tnm[m][12];  nm[39]=tnm[m][55];  nm[40]=tnm[m][9];
    nm[41]=tnm[m][32];  nm[42]=tnm[m][34];  nm[43]=tnm[m][29];  nm[44]=tnm[m][35];
    nm[45]=tnm[m][15];  nm[46]=tnm[m][49];  nm[47]=tnm[m][14];  nm[48]=tnm[m][52];
    nm[49]=tnm[m][41];  nm[50]=tnm[m][23];  nm[51]=tnm[m][44];  nm[52]=tnm[m][22];
    nm[53]=tnm[m][58];  nm[54]=tnm[m][8];   nm[55]=tnm[m][59];  nm[56]=tnm[m][5];
    nm[57]=tnm[m][20];  nm[58]=tnm[m][46];  nm[59]=tnm[m][17];  nm[60]=tnm[m][47];
    nm[61]=tnm[m][3];   nm[62]=tnm[m][61];  nm[63]=tnm[m][2];   nm[64]=tnm[m][64];
    for(n=0;n<65;n++){tnm[m][n]=nm[n];}
}
}
//
/* Sort the Solutions according to n1,n2,n4,n6 and n9 *
void srt26(void){
    short m,n,f;
    long d1,d2,d3,d4;
    m=tcnt;
    do{f=0; m--;
        for(n=0;n<m;n++){
            if(tnm[n][1]>tnm[n+1][1]){exc26(n); f=1;}
            d1=((tnm[n][2]*65+tnm[n][4])*65+tnm[n][9])*65-tnm[n][10];
            d2=((tnm[n+1][2]*65+tnm[n+1][4])*65+tnm[n+1][9])*65-tnm[n+1][10];
            if((tnm[n][1]==tnm[n+1][1])&&(d1<d2)){exc26(n); f=1;}
            d3=((tnm[n][12]*65-tnm[n][25])*65+tnm[n][26])*65+tnm[n][28];
            d4=((tnm[n+1][12]*65-tnm[n+1][25])*65+tnm[n+1][26])*65+tnm[n+1][28];
            if((tnm[n][1]==tnm[n+1][1])&&(d1==d2)&&(d3>d4)){exc26(n); f=1;}
        }
    }while(f>0);
}
/* Exchange solution pairs according to their own values *
void exc26(short x){
    short p,sv;
    for(p=1;p<65;p++){sv=tnm[x][p]; tnm[x][p]=tnm[x+1][p]; tnm[x+1][p]=sv;}
}
//
/* Print 3 Pieces of '3-T Simul' MS88 *
void prms8(short x, short y){
    short l,l8,m,n,p;
    for(m=x-1;m<y;m=m+3){
        for(n=0;n<3;n++){
            printf("%24d#",tnm[m+n][0]);
            if(n<2){printf(" ");}
        }
        printf("\n");
        for(l=0;l<8;l++){l8=l*8;
            for(n=0;n<3;n++){
                printf(" ");
                for(p=1;p<9;p++){printf("%3d",tnm[m+n][l8+p]);}
                if(n<2){printf(" ");}
            }
            printf("\n");
        }
    }
}
}
}

```

```

//
/** Print MS88Sm1 with D2i *
void prms8d2i(short x, short y){
short l,l8,m,n,d,p;
short dn[65][7];
for(m=x-1;m<y;m++){
for(n=0;n<65;n++){
dn[n][0]=tnm[m][n]; d=tnm[m][n]-1; p=6;
do{dn[n][p]=d%2; d=d/2; p--;}while(p>0);
}
printf("%24d# /D2i\n",tnm[m][0]);
for(l=0;l<8;l++){l8=l*8;
printf(" ");
for(p=1;p<9;p++){printf("%3d",dn[l8+p][0]);}
printf(" ");
for(n=1;n<7;n++){
printf(" ");
for(p=1;p<9;p++){printf("%d",dn[l8+p][n]);}
}
printf("\n");
}
}
}

```

The following list shows the execution result of our new composition. I added the decomposition diagrams(/D2i) with our first several solutions.

```

** Composition of the 4-Type Simultaneous Magic Squares 8x8 **
** by our Newest Method using all possible View-Forms of **
** the Developed Extra-Cubic Objects of Order 2^6 **
** List of the Standard Solutions of '4-Type Simultaneous' MS88:
Multiple, 'Composite', Self-complementary and Pan-diagonal; **

```

													1#	/D2i											
1	63	4	62	18	48	19	45	01010101	01011010	01010101	01010101	01100110	00111100												
60	6	57	7	43	21	42	24	10101010	10100101	10101010	10101010	10011001	11000011												
13	51	16	50	30	36	31	33	01010101	01011010	10101010	10101010	01100110	00111100												
56	10	53	11	39	25	38	28	10101010	10100101	01010101	10101010	10011001	11000011												
37	27	40	26	54	12	55	9	10101010	01011010	01010101	10101010	01100110	00111100												
32	34	29	35	15	49	14	52	01010101	10100101	10101010	10101010	10011001	11000011												
41	23	44	22	58	8	59	5	10101010	01011010	10101010	01010101	01100110	00111100												
20	46	17	47	3	61	2	64	01010101	10100101	01010101	01010101	10011001	11000011												
													2#	/D2i											
1	63	4	62	34	32	35	29	01011010	01010101	01010101	01010101	01100110	00111100												
60	6	57	7	27	37	26	40	10100101	10101010	10101010	01010101	10011001	11000011												
13	51	16	50	46	20	47	17	01011010	01010101	10101010	10101010	01100110	00111100												
56	10	53	11	23	41	22	44	10100101	10101010	01010101	10101010	10011001	11000011												
21	43	24	42	54	12	55	9	01011010	10101010	01010101	10101010	01100110	00111100												
48	18	45	19	15	49	14	52	10100101	01010101	10101010	10101010	10011001	11000011												
25	39	28	38	58	8	59	5	01011010	10101010	10101010	01010101	01100110	00111100												
36	30	33	31	3	61	2	64	10100101	01010101	01010101	01010101	10011001	11000011												
													3#	/D2i											
1	63	4	62	10	56	11	53	01010101	01010101	01011010	01010101	01100110	00111100												
60	6	57	7	51	13	50	16	10101010	10101010	10100101	01010101	10011001	11000011												
21	43	24	42	30	36	31	33	01010101	10101010	01011010	10101010	01100110	00111100												
48	18	45	19	39	25	38	28	10101010	01010101	10100101	10101010	10011001	11000011												
37	27	40	26	46	20	47	17	10101010	01010101	01011010	10101010	01100110	00111100												
32	34	29	35	23	41	22	44	01010101	10101010	10100101	10101010	10011001	11000011												
49	15	52	14	58	8	59	5	10101010	10101010	01011010	01010101	01100110	00111100												
12	54	9	55	3	61	2	64	01010101	01010101	10100101	01010101	10011001	11000011												



4# /D2i

```

1 63 4 62 34 32 35 29 01011010 01010101 01010101 01010101 01100110 00111100
60 6 57 7 27 37 26 40 10100101 10101010 10101010 01010101 10011001 11000011
21 43 24 42 54 12 55 9 01011010 10101010 01010101 10101010 01100110 00111100
48 18 45 19 15 49 14 52 10100101 01010101 10101010 10101010 10011001 11000011
13 51 16 50 46 20 47 17 01011010 01010101 10101010 10101010 01100110 00111100
56 10 53 11 23 41 22 44 10100101 10101010 01010101 10101010 10011001 11000011
25 39 28 38 58 8 59 5 01011010 10101010 10101010 01010101 01100110 00111100
36 30 33 31 3 61 2 64 10100101 01010101 01010101 01010101 10011001 11000011

```

5# /D2i

```

1 63 4 62 10 56 11 53 01010101 01010101 01011010 01010101 01100110 00111100
60 6 57 7 51 13 50 16 10101010 10101010 10100101 01010101 10011001 11000011
37 27 40 26 46 20 47 17 10101010 01010101 01011010 10101010 01100110 00111100
32 34 29 35 23 41 22 44 01010101 10101010 10100101 10101010 10011001 11000011
21 43 24 42 30 36 31 33 01010101 10101010 01011010 10101010 01100110 00111100
48 18 45 19 39 25 38 28 10101010 01010101 10100101 10101010 10011001 11000011
49 15 52 14 58 8 59 5 10101010 10101010 01011010 01010101 01100110 00111100
12 54 9 55 3 61 2 64 01010101 01010101 10100101 01010101 10011001 11000011

```

6# /D2i

```

1 63 4 62 18 48 19 45 01010101 01011010 01010101 01010101 01100110 00111100
60 6 57 7 43 21 42 24 10101010 10100101 10101010 01010101 10011001 11000011
37 27 40 26 54 12 55 9 10101010 01011010 01010101 10101010 01100110 00111100
32 34 29 35 15 49 14 52 01010101 10100101 10101010 10101010 10011001 11000011
13 51 16 50 30 36 31 33 01010101 01011010 10101010 10101010 01100110 00111100
56 10 53 11 39 25 38 28 10101010 10100101 01010101 10101010 10011001 11000011
41 23 44 22 58 8 59 5 10101010 01011010 10101010 01010101 01100110 00111100
20 46 17 47 3 61 2 64 01010101 10100101 01010101 01010101 10011001 11000011

```

7#

```

1 63 4 62 18 48 19 45
56 10 53 11 39 25 38 28
13 51 16 50 30 36 31 33
60 6 57 7 43 21 42 24
41 23 44 22 58 8 59 5
32 34 29 35 15 49 14 52
37 27 40 26 54 12 55 9
20 46 17 47 3 61 2 64

```

8#

```

1 63 4 62 34 32 35 29
56 10 53 11 23 41 22 44
13 51 16 50 46 20 47 17
60 6 57 7 27 37 26 40
25 39 28 38 58 8 59 5
48 18 45 19 15 49 14 52
21 43 24 42 54 12 55 9
36 30 33 31 3 61 2 64

```

9#

```

1 63 4 62 6 60 7 57
56 10 53 11 51 13 50 16
25 39 28 38 30 36 31 33
48 18 45 19 43 21 42 24
41 23 44 22 46 20 47 17
32 34 29 35 27 37 26 40
49 15 52 14 54 12 55 9
8 58 5 59 3 61 2 64

```

10#

```

1 63 4 62 34 32 35 29
56 10 53 11 23 41 22 44
25 39 28 38 58 8 59 5
48 18 45 19 15 49 14 52
13 51 16 50 46 20 47 17
60 6 57 7 27 37 26 40
21 43 24 42 54 12 55 9
36 30 33 31 3 61 2 64

```

11#

```

1 63 4 62 6 60 7 57
56 10 53 11 51 13 50 16
41 23 44 22 46 20 47 17
32 34 29 35 27 37 26 40
25 39 28 38 30 36 31 33
48 18 45 19 43 21 42 24
49 15 52 14 54 12 55 9
8 58 5 59 3 61 2 64

```

12#

```

1 63 4 62 18 48 19 45
56 10 53 11 39 25 38 28
41 23 44 22 58 8 59 5
32 34 29 35 15 49 14 52
13 51 16 50 30 36 31 33
60 6 57 7 43 21 42 24
37 27 40 26 54 12 55 9
20 46 17 47 3 61 2 64

```

13#

```

1 63 4 62 10 56 11 53
48 18 45 19 39 25 38 28
21 43 24 42 30 36 31 33
60 6 57 7 51 13 50 16
49 15 52 14 58 8 59 5
32 34 29 35 23 41 22 44
37 27 40 26 46 20 47 17
12 54 9 55 3 61 2 64

```

14#

```

1 63 4 62 34 32 35 29
48 18 45 19 15 49 14 52
21 43 24 42 54 12 55 9
60 6 57 7 27 37 26 40
25 39 28 38 58 8 59 5
56 10 53 11 23 41 22 44
13 51 16 50 46 20 47 17
36 30 33 31 3 61 2 64

```

15#

```

1 63 4 62 6 60 7 57
48 18 45 19 43 21 42 24
25 39 28 38 30 36 31 33
56 10 53 11 51 13 50 16
49 15 52 14 54 12 55 9
32 34 29 35 27 37 26 40
41 23 44 22 46 20 47 17
8 58 5 59 3 61 2 64

```

<p>16#</p> <p>1 63 4 62 34 32 35 29 48 18 45 19 15 49 14 52 25 39 28 38 58 8 59 5 56 10 53 11 23 41 22 44 21 43 24 42 54 12 55 9 60 6 57 7 27 37 26 40 13 51 16 50 46 20 47 17 36 30 33 31 3 61 2 64</p> <p>19#</p> <p>1 63 4 62 10 56 11 53 32 34 29 35 23 41 22 44 37 27 40 26 46 20 47 17 60 6 57 7 51 13 50 16 49 15 52 14 58 8 59 5 48 18 45 19 39 25 38 28 21 43 24 42 30 36 31 33 12 54 9 55 3 61 2 64</p> <p>22#</p> <p>1 63 4 62 18 48 19 45 32 34 29 35 15 49 14 52 41 23 44 22 58 8 59 5 56 10 53 11 39 25 38 28 37 27 40 26 54 12 55 9 60 6 57 7 43 21 42 24 13 51 16 50 30 36 31 33 20 46 17 47 3 61 2 64</p> <p>25#</p> <p>1 63 6 60 18 48 21 43 62 4 57 7 45 19 42 24 11 53 16 50 28 38 31 33 56 10 51 13 39 25 36 30 35 29 40 26 52 14 55 9 32 34 27 37 15 49 12 54 41 23 46 20 58 8 61 3 22 44 17 47 5 59 2 64</p> <p>28#</p> <p>1 63 6 60 34 32 37 27 62 4 57 7 29 35 26 40 19 45 24 42 52 14 55 9 48 18 43 21 15 49 12 54 11 53 16 50 44 22 47 17 56 10 51 13 23 41 20 46 25 39 30 36 58 8 61 3 38 28 33 31 5 59 2 64</p> <p>31#</p> <p>1 63 6 60 18 48 21 43 56 10 51 13 39 25 36 30 11 53 16 50 28 38 31 33 62 4 57 7 45 19 42 24 41 23 46 20 58 8 61 3 32 34 27 37 15 49 12 54 35 29 40 26 52 14 55 9 22 44 17 47 5 59 2 64</p> <p>34#</p> <p>1 63 6 60 34 32 37 27 56 10 51 13 23 41 20 46 25 39 30 36 58 8 61 3 48 18 43 21 15 49 12 54 11 53 16 50 44 22 47 17 62 4 57 7 29 35 26 40 19 45 24 42 52 14 55 9 38 28 33 31 5 59 2 64</p>	<p>17#</p> <p>1 63 4 62 6 60 7 57 48 18 45 19 43 21 42 24 49 15 52 14 54 12 55 9 32 34 29 35 27 37 26 40 25 39 28 38 30 36 31 33 56 10 53 11 51 13 50 16 41 23 44 22 46 20 47 17 8 58 5 59 3 61 2 64</p> <p>20#</p> <p>1 63 4 62 18 48 19 45 32 34 29 35 15 49 14 52 37 27 40 26 54 12 55 9 60 6 57 7 43 21 42 24 41 23 44 22 58 8 59 5 56 10 53 11 39 25 38 28 13 51 16 50 30 36 31 33 20 46 17 47 3 61 2 64</p> <p>23#</p> <p>1 63 4 62 6 60 7 57 32 34 29 35 27 37 26 40 49 15 52 14 54 12 55 9 48 18 45 19 43 21 42 24 41 23 44 22 46 20 47 17 56 10 53 11 51 13 50 16 25 39 28 38 30 36 31 33 8 58 5 59 3 61 2 64</p> <p>26#</p> <p>1 63 6 60 34 32 37 27 62 4 57 7 29 35 26 40 11 53 16 50 44 22 47 17 56 10 51 13 23 41 20 46 19 45 24 42 52 14 55 9 48 18 43 21 15 49 12 54 25 39 30 36 58 8 61 3 38 28 33 31 5 59 2 64</p> <p>29#</p> <p>1 63 6 60 10 56 13 51 62 4 57 7 53 11 50 16 35 29 40 26 44 22 47 17 32 34 27 37 23 41 20 46 19 45 24 42 28 38 31 33 48 18 43 21 39 25 36 30 49 15 54 12 58 8 61 3 14 52 9 55 5 59 2 64</p> <p>32#</p> <p>1 63 6 60 34 32 37 27 56 10 51 13 23 41 20 46 11 53 16 50 44 22 47 17 62 4 57 7 29 35 26 40 25 39 30 36 58 8 61 3 48 18 43 21 15 49 12 54 19 45 24 42 52 14 55 9 38 28 33 31 5 59 2 64</p> <p>35#</p> <p>1 63 6 60 4 62 7 57 56 10 51 13 53 11 50 16 41 23 46 20 44 22 47 17 32 34 27 37 29 35 26 40 25 39 30 36 28 38 31 33 48 18 43 21 45 19 42 24 49 15 54 12 52 14 55 9 8 58 3 61 5 59 2 64</p>	<p>18#</p> <p>1 63 4 62 10 56 11 53 48 18 45 19 39 25 38 28 49 15 52 14 58 8 59 5 32 34 29 35 23 41 22 44 21 43 24 42 30 36 31 33 60 6 57 7 51 13 50 16 37 27 40 26 46 20 47 17 12 54 9 55 3 61 2 64</p> <p>21#</p> <p>1 63 4 62 6 60 7 57 32 34 29 35 27 37 26 40 41 23 44 22 46 20 47 17 56 10 53 11 51 13 50 16 49 15 52 14 54 12 55 9 48 18 45 19 43 21 42 24 25 39 28 38 30 36 31 33 8 58 5 59 3 61 2 64</p> <p>24#</p> <p>1 63 4 62 10 56 11 53 32 34 29 35 23 41 22 44 49 15 52 14 58 8 59 5 48 18 45 19 39 25 38 28 37 27 40 26 46 20 47 17 60 6 57 7 51 13 50 16 21 43 24 42 30 36 31 33 12 54 9 55 3 61 2 64</p> <p>27#</p> <p>1 63 6 60 10 56 13 51 62 4 57 7 53 11 50 16 19 45 24 42 28 38 31 33 48 18 43 21 39 25 36 30 35 29 40 26 44 22 47 17 32 34 27 37 23 41 20 46 49 15 54 12 58 8 61 3 14 52 9 55 5 59 2 64</p> <p>30#</p> <p>1 63 6 60 18 48 21 43 62 4 57 7 45 19 42 24 35 29 40 26 52 14 55 9 32 34 27 37 15 49 12 54 11 53 16 50 28 38 31 33 56 10 51 13 39 25 36 30 41 23 46 20 58 8 61 3 22 44 17 47 5 59 2 64</p> <p>33#</p> <p>1 63 6 60 4 62 7 57 56 10 51 13 53 11 50 16 25 39 30 36 28 38 31 33 48 18 43 21 45 19 42 24 41 23 46 20 44 22 47 17 32 34 27 37 29 35 26 40 49 15 54 12 52 14 55 9 8 58 3 61 5 59 2 64</p> <p>36#</p> <p>1 63 6 60 18 48 21 43 56 10 51 13 39 25 36 30 41 23 46 20 58 8 61 3 32 34 27 37 15 49 12 54 11 53 16 50 28 38 31 33 62 4 57 7 45 19 42 24 35 29 40 26 52 14 55 9 22 44 17 47 5 59 2 64</p>
--	--	--

37#	38#	39#
1 63 6 60 10 56 13 51	1 63 6 60 34 32 37 27	1 63 6 60 4 62 7 57
48 18 43 21 39 25 36 30	48 18 43 21 15 49 12 54	48 18 43 21 45 19 42 24
19 45 24 42 28 38 31 33	19 45 24 42 52 14 55 9	25 39 30 36 28 38 31 33
62 4 57 7 53 11 50 16	62 4 57 7 29 35 26 40	56 10 51 13 53 11 50 16
49 15 54 12 58 8 61 3	25 39 30 36 58 8 61 3	49 15 54 12 52 14 55 9
32 34 27 37 23 41 20 46	56 10 51 13 23 41 20 46	32 34 27 37 29 35 26 40
35 29 40 26 44 22 47 17	11 53 16 50 44 22 47 17	41 23 46 20 44 22 47 17
14 52 9 55 5 59 2 64	38 28 33 31 5 59 2 64	8 58 3 61 5 59 2 64
40#	41#	42#
1 63 6 60 34 32 37 27	1 63 6 60 4 62 7 57	1 63 6 60 10 56 13 51
48 18 43 21 15 49 12 54	48 18 43 21 45 19 42 24	48 18 43 21 39 25 36 30
25 39 30 36 58 8 61 3	49 15 54 12 52 14 55 9	49 15 54 12 58 8 61 3
56 10 51 13 23 41 20 46	32 34 27 37 29 35 26 40	32 34 27 37 23 41 20 46
19 45 24 42 52 14 55 9	25 39 30 36 28 38 31 33	19 45 24 42 28 38 31 33
62 4 57 7 29 35 26 40	56 10 51 13 53 11 50 16	62 4 57 7 53 11 50 16
11 53 16 50 44 22 47 17	41 23 46 20 44 22 47 17	35 29 40 26 44 22 47 17
38 28 33 31 5 59 2 64	8 58 3 61 5 59 2 64	14 52 9 55 5 59 2 64
43#	44#	45#
1 63 6 60 10 56 13 51	1 63 6 60 18 48 21 43	1 63 6 60 4 62 7 57
32 34 27 37 23 41 20 46	32 34 27 37 15 49 12 54	32 34 27 37 29 35 26 40
35 29 40 26 44 22 47 17	35 29 40 26 52 14 55 9	41 23 46 20 44 22 47 17
62 4 57 7 53 11 50 16	62 4 57 7 45 19 42 24	56 10 51 13 53 11 50 16
49 15 54 12 58 8 61 3	41 23 46 20 58 8 61 3	49 15 54 12 52 14 55 9
48 18 43 21 39 25 36 30	56 10 51 13 39 25 36 30	48 18 43 21 45 19 42 24
19 45 24 42 28 38 31 33	11 53 16 50 28 38 31 33	25 39 30 36 28 38 31 33
14 52 9 55 5 59 2 64	22 44 17 47 5 59 2 64	8 58 3 61 5 59 2 64
46#	47#	48#
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62 4 53 11 57 7 50 16	62 4 53 11 45 19 38 28	60 6 51 13 57 7 50 16
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14 52 5 59 9 55 2 64	26 40 17 47 9 55 2 64	12 54 3 61 9 55 2 64
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37 27 46 20 54 12 61 3	49 15 58 8 52 14 59 5	49 15 58 8 54 12 61 3
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35 29 44 22 52 14 59 5	37 27 46 20 40 26 47 17	35 29 44 22 40 26 47 17
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62 19 38 11 42 7 50 31	60 21 36 13 43 6 51 30	60 21 36 13 42 7 50 31
34 15 58 23 54 27 46 3	35 14 59 22 52 29 44 5	34 15 58 23 52 29 44 5
63 18 39 10 43 6 51 30	62 19 38 11 45 4 53 28	63 18 39 10 45 4 53 28
4 45 28 53 24 57 16 33	7 42 31 50 24 57 16 33	6 43 30 51 24 57 16 33
29 52 5 44 9 40 17 64	26 55 2 47 9 40 17 64	27 54 3 46 9 40 17 64
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14 52 15 49 29 35 32 34	14 52 15 49 45 19 48 18	22 44 23 41 29 35 32 34
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38 28 39 25 53 11 56 10	22 44 23 41 53 11 56 10	38 28 39 25 45 19 48 18
31 33 30 36 16 50 13 51	47 17 46 20 16 50 13 51	31 33 30 36 24 42 21 43
42 24 43 21 57 7 60 6	26 40 27 37 57 7 60 6	50 16 51 13 57 7 60 6
19 45 18 48 4 62 1 63	35 29 34 32 4 62 1 63	11 53 10 56 4 62 1 63

<p>364#</p> <p>2 64 3 61 33 31 36 30 59 5 58 8 28 38 25 39 22 44 23 41 53 11 56 10 47 17 46 20 16 50 13 51 14 52 15 49 45 19 48 18 55 9 54 12 24 42 21 43 26 40 27 37 57 7 60 6 35 29 34 32 4 62 1 63</p> <p>...</p> <p>718#</p> <p>2 47 26 55 22 59 14 35 31 50 7 42 11 38 19 62 36 13 60 21 56 25 48 1 61 20 37 12 41 8 49 32 33 16 57 24 53 28 45 4 64 17 40 9 44 5 52 29 3 46 27 54 23 58 15 34 30 51 6 43 10 39 18 63</p> <p>721#</p> <p>3 64 2 61 17 46 20 47 58 5 59 8 44 23 41 22 15 52 14 49 29 34 32 35 54 9 55 12 40 27 37 26 39 28 38 25 53 10 56 11 30 33 31 36 16 51 13 50 43 24 42 21 57 6 60 7 18 45 19 48 4 63 1 62</p> <p>724#</p> <p>3 64 2 61 33 30 36 31 58 5 59 8 28 39 25 38 23 44 22 41 53 10 56 11 46 17 47 20 16 51 13 50 15 52 14 49 45 18 48 19 54 9 55 12 24 43 21 42 27 40 26 37 57 6 60 7 34 29 35 32 4 63 1 62</p> <p>...</p> <p>1078#</p> <p>3 46 27 54 23 58 15 34 30 51 6 43 10 39 18 63 36 13 60 21 56 25 48 1 61 20 37 12 41 8 49 32 33 16 57 24 53 28 45 4 64 17 40 9 44 5 52 29 2 47 26 55 22 59 14 35 31 50 7 42 11 38 19 62</p> <p>1081#</p> <p>4 63 1 62 18 45 19 48 57 6 60 7 43 24 42 21 16 51 13 50 30 33 31 36 53 10 56 11 39 28 38 25 40 27 37 26 54 9 55 12 29 34 32 35 15 52 14 49 44 23 41 22 58 5 59 8 17 46 20 47 3 64 2 61</p> <p>1084#</p> <p>4 63 1 62 34 29 35 32 57 6 60 7 27 40 26 37 24 43 21 42 54 9 55 12 45 18 48 19 15 52 14 49 16 51 13 50 46 17 47 20 53 10 56 11 23 44 22 41 28 39 25 38 58 5 59 8 33 30 36 31 3 64 2 61</p>	<p>365#</p> <p>2 64 3 61 9 55 12 54 59 5 58 8 52 14 49 15 38 28 39 25 45 19 48 18 31 33 30 36 24 42 21 43 22 44 23 41 29 35 32 34 47 17 46 20 40 26 37 27 50 16 51 13 57 7 60 6 11 53 10 56 4 62 1 63</p> <p>719#</p> <p>2 47 26 55 17 64 9 40 31 50 7 42 16 33 24 57 38 11 62 19 53 28 45 4 59 22 35 14 44 5 52 29 36 13 60 21 51 30 43 6 61 20 37 12 46 3 54 27 8 41 32 49 23 58 15 34 25 56 1 48 10 39 18 63</p> <p>722#</p> <p>3 64 2 61 33 30 36 31 58 5 59 8 28 39 25 38 15 52 14 49 45 18 48 19 54 9 55 12 24 43 21 42 23 44 22 41 53 10 56 11 46 17 47 20 16 51 13 50 27 40 26 37 57 6 60 7 34 29 35 32 4 63 1 62</p> <p>725#</p> <p>3 64 2 61 9 54 12 55 58 5 59 8 52 15 49 14 39 28 38 25 45 18 48 19 30 33 31 36 24 43 21 42 23 44 22 41 29 34 32 35 46 17 47 20 40 27 37 26 51 16 50 13 57 6 60 7 10 53 11 56 4 63 1 62</p> <p>...</p> <p>1079#</p> <p>3 46 27 54 17 64 9 40 30 51 6 43 16 33 24 57 39 10 63 18 53 28 45 4 58 23 34 15 44 5 52 29 36 13 60 21 50 31 42 7 61 20 37 12 47 2 55 26 8 41 32 49 22 59 14 35 25 56 1 48 11 38 19 62</p> <p>1082#</p> <p>4 63 1 62 34 29 35 32 57 6 60 7 27 40 26 37 16 51 13 50 46 17 47 20 53 10 56 11 23 44 22 41 24 43 21 42 54 9 55 12 45 18 48 19 15 52 14 49 28 39 25 38 58 5 59 8 33 30 36 31 3 64 2 61</p> <p>1085#</p> <p>4 63 1 62 10 53 11 56 57 6 60 7 51 16 50 13 40 27 37 26 46 17 47 20 29 34 32 35 23 44 22 41 24 43 21 42 30 33 31 36 45 18 48 19 39 28 38 25 52 15 49 14 58 5 59 8 9 54 12 55 3 64 2 61</p>	<p>366#</p> <p>2 64 3 61 17 47 20 46 59 5 58 8 44 22 41 23 38 28 39 25 53 11 56 10 31 33 30 36 16 50 13 51 14 52 15 49 29 35 32 34 55 9 54 12 40 26 37 27 42 24 43 21 57 7 60 6 19 45 18 48 4 62 1 63</p> <p>720#</p> <p>2 47 26 55 20 61 12 37 31 50 7 42 13 36 21 60 38 11 62 19 56 25 48 1 59 22 35 14 41 8 49 32 33 16 57 24 51 30 43 6 64 17 40 9 46 3 54 27 5 44 29 52 23 58 15 34 28 53 4 45 10 39 18 63</p> <p>723#</p> <p>3 64 2 61 9 54 12 55 58 5 59 8 52 15 49 14 23 44 22 41 29 34 32 35 46 17 47 20 40 27 37 26 39 28 38 25 45 18 48 19 30 33 31 36 24 43 21 42 51 16 50 13 57 6 60 7 10 53 11 56 4 63 1 62</p> <p>726#</p> <p>3 64 2 61 17 46 20 47 58 5 59 8 44 23 41 22 39 28 38 25 53 10 56 11 30 33 31 36 16 51 13 50 15 52 14 49 29 34 32 35 54 9 55 12 40 27 37 26 43 24 42 21 57 6 60 7 18 45 19 48 4 63 1 62</p> <p>...</p> <p>1080#</p> <p>3 46 27 54 20 61 12 37 30 51 6 43 13 36 21 60 39 10 63 18 56 25 48 1 58 23 34 15 41 8 49 32 33 16 57 24 50 31 42 7 64 17 40 9 47 2 55 26 5 44 29 52 22 59 14 35 28 53 4 45 11 38 19 62</p> <p>1083#</p> <p>4 63 1 62 10 53 11 56 57 6 60 7 51 16 50 13 24 43 21 42 30 33 31 36 45 18 48 19 39 28 38 25 40 27 37 26 46 17 47 20 29 34 32 35 23 44 22 41 52 15 49 14 58 5 59 8 9 54 12 55 3 64 2 61</p> <p>1086#</p> <p>4 63 1 62 18 45 19 48 57 6 60 7 43 24 42 21 40 27 37 26 54 9 55 12 29 34 32 35 15 52 14 49 16 51 13 50 30 33 31 36 53 10 56 11 39 28 38 25 44 23 41 22 58 5 59 8 17 46 20 47 3 64 2 61</p>
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is always found in the old list of solutions I got before without any exceptions.

We could not make any other type of solutions, neither duplications nor drop-offs of any solution at all.

We could make all by this method directly from the basic view-forms of ECO2<sup>6</sup>. It is amazing, isn't it? But why? What makes it always possible?

## #5. Discussion

(1) Why could we make all objects by this unique, simplest method directly from all the possible view-forms of developed ECO2<sup>6</sup>?

We really made the set of 46080 'Prototype Squares' of order 8<sup>2</sup> unconsciously, under the name of composing all the possible 'view forms' of developed ECO2<sup>6</sup>.

That is the reason why we could use and successfully apply 'DAM Transformation' to those compositions.

(2) What does it mean by the counts 46080? We could draw 46080 different view forms in all for the developed ECO. On the other hand we know we could also make the 46080 'primitive' solutions of 'C&C' MC4<sup>3</sup> and of '4-type simultaneous' MS8<sup>2</sup>.

The 960 'standard' solutions of MC4<sup>3</sup> are logically equivalent to 46080 'primitive' solutions. The 5760 'standard' solutions of MS88 are also equivalent to the 46080 'primitive' solutions. Do all of them mean only an accidental equality?

I think this might surely mean one thing. There is essentially only one form of solution in the 6-dimensional world, where Divine Being enjoys the original form of ECO as it is. But it actually appears in different images as many as 46080 here in our world, and we could only enjoy them as they look. This is implied by the existence of 46080 different view forms for the same developed ECO2<sup>6</sup>. Every object solution is considered to be the 'phenomenon' of the original One.

'C&C' magic cubes 4<sup>3</sup>, multiple type of 'C&C' magic squares 8<sup>2</sup> and 4-type simultaneous magic squares 8<sup>2</sup> really look like the "Offspring" of the same "Father Origin", whose family they should belong to. You can find some important mutual relationship among those three types of magic things.

(3) We did not yet define any simultaneous equations in advance here, either. We did only make possible 'view-forms' of developed ECO and transform them directly into objects. Why did we need no definitions at all at the beginning?

Does it mean any definitions are of no use or totally meaningless?

But, have we really started our composition without any kinds of premises at all?

No, it isn't true. We cannot really do anything without premises at all. In fact we used the six-time loops of for(...){...} sentences and produced binary numbers by calculations, didn't we?

Yes. Our secret key is just the Binary Number System.

Let me show you the next diagrams below with binary decompositions. I put them to both the prototype and corresponding object solutions. What do they mean?

\*\* The Most Fundamental Three of 'S-C' & 'C&C' M.C.4<sup>3</sup> and M.S.8<sup>2</sup> \*\*

[0] Proto1/EC2<sup>6</sup>

1----	2	3----	4	33----	34	35----	36
5---+	6	7---+	8	37---+	38	39---+	40
9-- -10		11-- -12		41-- -42		43-- -44	
13----	14	15----	16	45----	46	47----	48
17----	18	19----	20	49----	50	51----	52
21---+	22	23---+	24	53---+	54	55---+	56
25-- -26		27-- -28		57-- -58		59-- -60	
29----	30	31----	32	61----	62	63----	64



/D2i: 2^5/

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0--0	0--0	1--1	1--1	0--0	0--0	1--1	1--1
0- 0	0- 0	1- 1	1- 1	0- 0	0- 0	1- 1	1- 1
0--0	0--0	1--1	1--1	0--0	0--0	1--1	1--1

2^4/

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0- 0	0- 0	0- 0	0- 0	1- 1	1- 1	1- 1	1- 1
0--0	0--0	0--0	0--0	1--1	1--1	1--1	1--1

2^3/

0--0	0--0	0--0	0--0	0--0	0--0	0--0	0--0
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1- 1	1- 1	1- 1	1- 1	1- 1	1- 1	1- 1	1- 1
1--1	1--1	1--1	1--1	1--1	1--1	1--1	1--1

2^2/

0--0	0--0	0--0	0--0	0--0	0--0	0--0	0--0
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0- 0	0- 0	0- 0	0- 0	0- 0	0- 0	0- 0	0- 0
1--1	1--1	1--1	1--1	1--1	1--1	1--1	1--1

2^1/

0--0	1--1	0--0	1--1	0--0	1--1	0--0	1--1
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0- 0	1- 1	0- 0	1- 1	0- 0	1- 1	0- 0	1- 1
0--0	1--1	0--0	1--1	0--0	1--1	0--0	1--1

2^0/

0--1	0--1	0--1	0--1	0--1	0--1	0--1	0--1
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0- 1	0- 1	0- 1	0- 1	0- 1	0- 1	0- 1	0- 1
0--1	0--1	0--1	0--1	0--1	0--1	0--1	0--1

P1/ /D2i

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41	42	43	44	45	46	47	48	11111111	00000000	11111111	00001111	00110011	01010101
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57	58	59	60	61	62	63	64	11111111	11111111	11111111	00001111	00110011	01010101

/2^5 /^4 /^3 /^2 /^1 /^0

[1] Solution1/EC2^6

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13----	51	50----	16	20----	46	47----	17
48----	18	19----	45	49----	15	14----	52
21--+-	43	42--+-	24	12--+-	54	55--+-	9
25--	-39	38--	-28	8--	-58	59--	5
36----	30	31----	33	61----	3	2----	64

/D2i: 2^5/

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2^4/

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2^3/

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1--0	0--1	0--1	1--0	0--1	1--0	1--0	0--1

2^2/

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1- 0	0- 1	0- 1	1- 0	0- 1	1- 0	1- 0	0- 1
1--0	0--1	0--1	1--0	0--1	1--0	1--0	0--1

2^1/

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2^0/

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1- 1	0- 0	0- 0	1- 1	0- 0	1- 1	1- 1	0- 0
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S1/ /D2i

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25 39 28 38 30 36 31 33	01010101	10101010	10101010	01011010	01100110	00111100
48 18 45 19 43 21 42 24	10101010	01010101	10101010	10100101	10011001	11000011
41 23 44 22 46 20 47 17	10101010	01010101	10101010	01011010	01100110	00111100
32 34 29 35 27 37 26 40	01010101	10101010	10101010	10100101	10011001	11000011
49 15 52 14 54 12 55 9	10101010	10101010	01010101	01011010	01100110	00111100
8 58 5 59 3 61 2 64	01010101	01010101	01010101	10100101	10011001	11000011
	/2^5	/^4	/^3	/^2	/^1	/^0

[2]

P2/ /D2i

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33 35 34 36 37 39 38 40	11111111	00000000	00000000	00001111	01010101	00110011
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49 51 50 52 53 55 54 56	11111111	11111111	00000000	00001111	01010101	00110011
57 59 58 60 61 63 62 64	11111111	11111111	11111111	00001111	01010101	00110011

S2/ /D2i

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41 22 44 23 47 20 46 17	10101010	01010101	10101010	01011010	00111100	01100110
32 35 29 34 26 37 27 40	01010101	10101010	10101010	10100101	11000011	10011001
49 14 52 15 55 12 54 9	10101010	10101010	01010101	01011010	00111100	01100110
8 59 5 58 2 61 3 64	01010101	01010101	01010101	10100101	11000011	10011001
	/2^5	/^4	/^3	/^2	/^1	/^0

[3]

P3/ /D2i

1 2 5 6 3 4 7 8	00000000	00000000	00000000	00110011	00001111	01010101
9 10 13 14 11 12 15 16	00000000	00000000	11111111	00110011	00001111	01010101
17 18 21 22 19 20 23 24	00000000	11111111	00000000	00110011	00001111	01010101
25 26 29 30 27 28 31 32	00000000	11111111	11111111	00110011	00001111	01010101
33 34 37 38 35 36 39 40	11111111	00000000	00000000	00110011	00001111	01010101
41 42 45 46 43 44 47 48	11111111	00000000	11111111	00110011	00001111	01010101
49 50 53 54 51 52 55 56	11111111	11111111	00000000	00110011	00001111	01010101
57 58 61 62 59 60 63 64	11111111	11111111	11111111	00110011	00001111	01010101

S3/ /D2i

1 63 6 60 4 62 7 57	01010101	01010101	01010101	01100110	01011010	00111100
56 10 51 13 53 11 50 16	10101010	10101010	01010101	10011001	10100101	11000011
25 39 30 36 28 38 31 33	01010101	10101010	10101010	01100110	01011010	00111100

48	18	43	21	45	19	42	24	10101010	01010101	10101010	10011001	10100101	11000011
41	23	46	20	44	22	47	17	10101010	01010101	10101010	01100110	01011010	00111100
32	34	27	37	29	35	26	40	01010101	10101010	10101010	10011001	10100101	11000011
49	15	54	12	52	14	55	9	10101010	10101010	01010101	01100110	01011010	00111100
8	58	3	61	5	59	2	64	01010101	01010101	01010101	10011001	10100101	11000011
								/2^5	/^4	/^3	/^2	/^1	/^0

[4]

								P4/	/D2i					
1	3	5	7	2	4	6	8	00000000	00000000	00000000	00110011	01010101	00001111	
9	11	13	15	10	12	14	16	00000000	00000000	11111111	00110011	01010101	00001111	
17	19	21	23	18	20	22	24	00000000	11111111	00000000	00110011	01010101	00001111	
25	27	29	31	26	28	30	32	00000000	11111111	11111111	00110011	01010101	00001111	
33	35	37	39	34	36	38	40	11111111	00000000	00000000	00110011	01010101	00001111	
41	43	45	47	42	44	46	48	11111111	00000000	11111111	00110011	01010101	00001111	
49	51	53	55	50	52	54	56	11111111	11111111	00000000	00110011	01010101	00001111	
57	59	61	63	58	60	62	64	11111111	11111111	11111111	00110011	01010101	00001111	
								S4/	/D2i					
1	62	7	60	4	63	6	57	01010101	01010101	01010101	01100110	00111100	01011010	
56	11	50	13	53	10	51	16	10101010	10101010	01010101	10011001	11000011	10100101	
25	38	31	36	28	39	30	33	01010101	10101010	10101010	01100110	00111100	01011010	
48	19	42	21	45	18	43	24	10101010	01010101	10101010	10011001	11000011	10100101	
41	22	47	20	44	23	46	17	10101010	01010101	10101010	01100110	00111100	01011010	
32	35	26	37	29	34	27	40	01010101	10101010	10101010	10011001	11000011	10100101	
49	14	55	12	52	15	54	9	10101010	10101010	01010101	01100110	00111100	01011010	
8	59	2	61	5	58	3	64	01010101	01010101	01010101	10011001	11000011	10100101	
								/2^5	/^4	/^3	/^2	/^1	/^0	

.....

Do you notice all the solutions are 'Complete Euler Squares' of order 8? Every row and column of the solutions has the same number pattern of {0, 0, 1, 1} or {0, 0, 0, 0, 1, 1, 1, 1} in any layer of binary decompositions. Each pan-diagonal has also the same combination of numbers. Every little square of 2 by 2 in any layer has the same thing, too. It means they are the mathematical basis of the same 'magic constant'.

$$(0+0+1+1)x^5+(0+0+1+1)x^4+(0+0+1+1)x^3+(0+0+1+1)x^2+(0+0+1+1)x^1+(0+0+1+1)x^0 = (0+0+1+1)x(32+16+8+4+2+1) =126$$

$$(0+0+0+0+1+1+1+1)x(2^5+2^4+2^3+2^2+2^1+2^0) = 4x(32+16+8+4+2+1) =252$$

The sum 126 here is logically equivalent to 130 in our classical notation. The sum 252 here is also equivalent to 260 in our classical notation.

Yes. We have done everything in order to compose 'Complete Euler Squares' of order 8 for our objects unconsciously.

We know both of the two objects are really the 'Complete Euler Cubes' of order 4 and 'Complete Euler Squares' of order 8.

Under the premise of using generator program of binary numbers, we prepared to make the 'Complete Euler' type of cubes and squares by drawing all possible view-forms of ECO2<sup>6</sup>. We regarded them as the Prototype Squares to make them into our objects by the 'DAM Transformations' in reality.

Binary Number System is the true reason for our success.

As you guess, you can only make your objects by this method of composition, as far as they are 'Complete Euler' type of magic squares and cubes. You can make no other than 'C.E.S.' or 'C.E.C.' On top of that you can only make those objects that are essentially any developed forms of high-dimensional Extra-Cubic Object.

In other words you can only make 'Complete Euler Squares' of order 4, 8 and 16, and 'C. E. Cubes' of order 4 actually by this method.

It sounds like only a limited application, and I am afraid it might discourage you, but don't be disappointed. It can surely make many important magic forms.

For instance, you can make Self-complementary MS8<sup>2</sup> including multiple little squares 4<sup>2</sup> within, as well as the same Multiple type of 'C&C' MS8<sup>2</sup>. You can also make Multiple type of Self-complementary MC4<sup>3</sup> including little cubes 2<sup>3</sup> within. They might be any 'fundamental solutions' of the common magic forms, we can expect.

All of them might be the offspring of the only one Origin, whose family they should essentially belong to, I think.

I myself am so excited that I am convinced there might be a great relationship among those topics: 'Binary Number System', 'Complete Euler Squares', 'High-dimensional Extra-Cubic Objects', 'Prototype Squares' and 'DAM Transformation'.

For they are all the special themes that I have always studied about as hard as I could. Everything I know seems to point at the same thing. How wonderful it is!

I suppose this 'great relationship' might have been one of the greatest 'mysteries' revealed to us by our Divine Being, the only Creator of Everything.

My philosophical spirit is deeply fascinated and now getting more active.

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