Book 4: Chapter 3

Representation of Propositions of Relation , One in terms of *x* and *m*, And the other in terms of *y* and *m* On the same diagram.

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The Reader had better now begin to draw little Diagrams for himself, and to mark them with the Digits "1" and "0", instead of using the Board and Counters: he may put a "1" to represent a Red Counter (this may be interpreted to mean "There is at least one Thing here"), and a "0" to represent a Grey Counter (this may be interpreted to mean "There is nothing here").

The Pair of Propositions, that we shall have to represent, wiil always be, one in terms of x and m, and the other in terms of y and m.

When we have to represent a Proposition beginning with "All", we break it up into the two Propositions to which it is equivalent.

When we have to represent, on the same Diagram, Propositions, of which some begin with "Some and others with "No", we represent the negative ones first. This will sometimes save us from having to put a "1" "on a fence" and afterwards having to shift it into a Cell.

[Let us work a few examples.

(1) "No x are m'; No y' are m".

Let us first represent "No x are m' ". This gives us Diagram a.

Then, representing "No y' are m" on the same Diagram, we get Diagram b.

```
        a                        b
 ---------------          ---------------
|(0)    |    (0)|        |(0)    |    (0)|
|    ---|---    |        |    ---|---    |
|   |   |   |   |        |   |   |(0)|   |
|---|---|---|---|        |---|---|---|---|
|   |   |   |   |        |   |   |(0)|   |
|    ---|---    |        |    ---|---    |
|       |       |        |       |       |
 ---------------          ---------------
```

(2) “Some m are x, No m are y”.

If, neglecting the Rule, we were begin with “Some m are x”, we should get Diagram a.

And if we were then to take “No m are y”, which tells us that the Inner N.W. Cell is empty, we should be obliged to take the “1” of the fence (as it no longer has the choice of two Cells), and to put it into the Inner N.E. Cell, as in Diagram c.

This trouble may be saved by beginning with “No m are y”, as in Diagram b.

And now, when we take “Some m are x”, there is no fence to sit on! The “1” has to go, at once, into the N.E. Cell, as in Diagram c.

```
        a                     b                     c
 ---------------       ---------------       ---------------
|       |       |     |       |       |     |       |       |
|    ---|---    |     |    ---|---    |     |    ---|---    |
|   |  (1)  |   |     |   |(0)|   |   |     |   |(0)|(1)|   |
|---|---|---|---|     |---|---|---|---|     |---|---|---|---|
|   |   |   |   |     |   |(0)|   |   |     |   |(0)|   |   |
|    ---|---    |     |    ---|---    |     |    ---|---    |
|       |       |     |       |       |     |       |       |
 ---------------       ---------------       ---------------
```

(3) “No x’ are m’; All m are y”.

Here we begin by breaking up the Second into the two Propositions to which it is equivalent. Thus we have three Propositions to represent, viz.–

(1) “No x’ are m’;

(2) Some m are y;
(3) No m are y'".

These we will take in the order 1, 3, 2.

First we take No. (1), viz. "No x' are m' ". This gives us Diagram a.

Adding to this, No. (3), viz. "No m are y'", we get Diagram b.

This time the "1", representing No. (2), viz. "Some m are y," has to sit on the fence, as there is no "0" to order it off! This gives us Diagram c.

```
        a                    b                    c
 ---------------      ---------------      ---------------
|       |       |    |       |       |    |       |       |
|    ---|---    |    |    ---|---    |    |    ---|---    |
|   |   |   |   |    |   |   |(0)|   |    |   |   |(0)|   |
|---|---|---|---|    |---|---|---|---|    |---|(1)|---|---|
|   |   |   |   |    |   |   |(0)|   |    |   |   |(0)|   |
|    ---|---    |    |    ---|---    |    |    ---|---    |
|(0)    |    (0)|    |(0)    |    (0)|    |(0)    |    (0)|
 ---------------      ---------------      ---------------
```

(4) "All m are x; All y are m".

Here we break up both Propositions, and thus get four to represent, viz.–

(1) "Some m are x;
(2) No m are x';
(3) Some y are m;
(4) No y are m'.

These we will take in the order 2, 4, 1, 3.

First we take No. (2), viz. "No m are x'". This gives us Diagram a.

To this we add No. (4), viz. "No y are m' ", and thus get Diagram b.

If we were to add to this No. (1), viz. "Some m are x", we should have to put the "1" on a fence: so let us try No. (3) instead, viz. "Some y are m". This gives us Diagram c.

And now there is no need to trouble about No. (1),as it would not add anything to our information to put a “1” on the fence. The Diagram already tells us that “Some m are x”.]

```
        a                     b                     c
 ---------------       ---------------       ---------------
|       |       |     |(0)    |       |     |(0)    |       |
|    ---|---    |     |    ---|---    |     |    ---|---    |
|   |   |   |   |     |   |   |   |   |     |   |(1)|   |   |
|---|---|---|---|     |---|---|---|---|     |---|---|---|---|
|   |(0)|(0)|   |     |   |(0)|(0)|   |     |   |(0)|(0)|   |
|    ---|---    |     |    ---|---    |     |    ---|---    |
|       |       |     |(0)    |       |     |(0)    |       |
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```