Book 3: Chapter 2

Counters.

Section 1. Introductory.

Henceforwards, instating such Propositions as “Some x-Things exist” or “No x-Things are y-Things”, I shall omit the word “Things”, which the Reader can supply for himself, and shall write them as “Some x exist” or “No x are y”.

[Note that the word “Things” is here used with a special meaning, as explained at p. 23.]

A Proposition, containing onely one of the Letters used as Symbols for Attributes, is said to be ‘Uniliteral’.

[For example, “Some x exist”, “No y’ exist”, &c.]

A Proposition, containing two Letters, is said to be ‘Biliteral’.

[For example, “Some xy’ exist”, “No x’ are y”, &c.]

A Proposition is said to be ‘in terms of’ the Letter it contains, whether with or without accents.

[Thus, “Some xy’ exist”, “No x’ are y”, &c, are said to be in terms of x and y.]

Section 2. Representation of Propositions of Existence.

Let us take, first, the Proposition “Some x exist”.

[Note that this Proposition is (as explained at p. 12) equivalent to “Some existing Things are x-Things.”]

This tells us that there is at least one Thing in the North Half; that is, that the North Half is occupied. And this we can evidently represent by placing a Red Counter (here represented by a dotted circle) on the partition which divides the North Half.

```
 -------
|  (1)  |
|---|---|
|   |   |
 -------
```

[In the "books" example, this Proposition would be "Some old books exist".]

Similarly we may represent the three similar Propositions "Some x' exist", "Some y exist", and "Some y' exist".

[The Reader should make out all these for himself. In the "books" example, these Propositions would be "Some new books exist", &c.]

Let us take, next, the Proposition "No x exist".

This tells us that there is nothing in the North Half; that is, that the North Half is empty; that is, that the North-West Cell and the North-East Cell are both of them empty. And this we can represent by placing two Grey Counters in the North Half, one in each Cell.

```
 -------
|(0)|(0)|
|---|---|
|   |   |
 -------
```

[The Reader may perhaps think that it would be enough to place a Grey Counter on the partition in the North Half, and that, just as a Red Counter, so placed, would mean "This Half is occupied", so a Grey one would mean "This Half is empty". This, however, would be a mistake. We have seen that a Red Counter, so placed, would mean "At least one of these two Cells is occupied: possibly both are." Hence a Grey one would merely mean "At least one of these two Cells is empty: possibly both are”. But what we have to represent is, that both Cells are certainly empty: and this can only be done by placing a Grey Counter in each of them. In the “books” example, this Proposition would be “No old books exist”.]

Similarly we may represent the three similar Propositions “No x’ exist”, “No y exist”, and “No y’ exist”.

[The Reader should make out all these for himself In the “books” example, these three Propositions would be “No new books exist”, &c.]

Let us take, next, the Proposition “Some xy exist”.

This tells us that there is at least one Thing in the North-West Cell; that is, that the North-West Cell is occupied. And this we can represent by placing Red Counter in it.

```
 -------
|(1)|   |
|---|---|
|   |   |
 -------
```

[In the “books” example, this Proposition would be “Some old English books exist”.]

Similarly we may represent the three similar Propositions “Some xy’ exist”, “Some x’y exist”, and “Some x’y’ exist”.

[The Reader should make out all these for himself. In the “books” example, these three Propositions would be Some old foreign books exist”, &c.]

Let us take, next, the Proposition “No xy exist”.

This tells us that there is nothing in the North-West Cell; that is, that the North-West Cell is empty. And this we can represent by placing a Grey Counter in it.

```
 -------
|(0)|   |
|---|---|
|   |   |
 -------
```

[In the “books” example, this Proposition would be “No old English books exist”.]

Similarly we may represent the three similar Propositions “No xy’ exist”, “No x’y exist”, and “No x’y’ exist”.

[The Reader should make out all these for himself. In the “books” example. these three Propositions would be “No old foreign books exist”, &c.]

```
      We have seen that the Proposition "No x exist"
    may be represented by placing two Grey Counters in the
North Half, one in each Cell.
 -------
|(0)|(0)|
|---|---|
|   |   |
 -------
```

We have also seen that these two Grey Counters, taken separately, represent the two Propositions “No xy exist” and “No xy’ exist”.

Hence we see that the Proposition “No x exist” is a Double Proposition, and is equivalent to the two Propositions “No xy exist” and “No xy’ exist”.

[In the “books” example, this Proposition would be “No old books exist”. Hence this is a Double Proposition, and is equivalent to the two Propositions “No old Ebglish books exist” and “No old foreign books exist”.

Section 3. Representation of Propositions of Relation.

Let us take, first, the Proposition “Some x are y”.

This tells us that at least one Thing, in the North Half also in the West Half. Hence it must be in the space common to them, that is, in the North-West Cell. Hence the North-West Cellis occupied. And this we can represent by placing a Red Counter in it.

```
 -------
|(1)|   |
|---|---|
|   |   |
 -------
```

[Note that the Subject of the Proposition settles which Half we are to use; and that the Predicate settles in which portion of it we are to place the Red Counter. In the "books" example, this Proposition would be "Some old books are English".]

Similarly we may represent the three similar Propositions "Some x are y'", "Some x' are y", and "Some x' are y'".

[The Reader should make out all these for himself. In the "books" example, these three Propositions would be "Some old books are foreign", &c.]

Let us take, next, the Proposition "Some y are x".

This tells us that at least one Thing, in the West Half, is also in the North Half. Hence it must be in the space common to then, that is, in the North-West Cell. Hence the North-West Cell is occupied. And this we can represent by placing a Red Counter in it.

```
 -------
|(1)|   |
|---|---|
|   |   |
 -------
```

[In the "books" example, this Proposition would be "Some English books are old".]

Similarly we may represent the three similar Propositions "Some y are x'", "Some y' are x", and "Some y' are x'".

[The Reader should make out all these for himself. In the "books" example, these three Propositions would be "Some English books are new", &c.]

```
      We see that this one Diagram has now served to
    represent no less than three Propositions, viz.
 -------
|(1)|   |
|---|---|
|   |   |
 ------- (1) "Some xy exist;
        (2)  Some x are y;
        (3)  Some y are x".
```

Hence these three Propositions are equivalent.

[In the "books" example, these Propositions would be (1) "Some old English books exist; (2) Some old books are English; (3) Some English books are old".]

The two equivalent Propositions, "Some x are y" and "Some y are x", are said to be 'Converse' to each other; and the Process, of changing one into the other, is called 'Converting', or 'Conversion'.

[For example, if we were told to convert the Proposition "Some apples are not ripe," we should first choose our Univ. (say "fruit"), and then complete the Proposition, by supplying the Substantive "fruit" in the Predicate, so that it would be "Some apples are not-ripe fruit"; and we should then convert it by interchanging its Terms, so that it would be "Some not-ripe fruit are apples".]

Similarly we may represent the three similar Trios of equvalent Propositions; the whole Set of four Trios being as follows:–

(1) "Some xy exist" = "Some x are y" = "Some y are x".
(2) "Some xy' exist" = "Some x are y'" = "Some y' are x".
(3) "Some x'y' exist" = "Some x' are y'" = "Some y' are x'".

Let us take, next, the Proposition "No x are y".

```
      This tell us that no Thing, in the North Half, is
```

also in the West Half. Hence there is nothing in the space common to them, that is, in the North-West Cell. Hence the North-West Cell is empty. And this we can represent by placing a Grey Counter in it.

```
 -------
|(0)|   |
|---|---|
|   |   |
 -------
```

[In the “books” example, this Proposition would be “No old books are English”.]

Similarly we may represent the three similar Propositions “No x are y’”, and “No x’ are y”, and “No x’ are y’”.

[The Reader should make out all these for himself. In the “books” example, these three Propositions would be “No old books are foreign”, &c.]

Let us take, next, the Proposition “No y are x”.

This tells us that no Thing, in the West Half, is also in the North Half. Hence there is nothing in the space common to them, that is, in the North-West Cell. That is, the North-West Cell is empty. And this we can represent by placing a Grey Counter in it.

```
 -------
|(0)|   |
|---|---|
|   |   |
 -------
```

[In the “books” example, this Proposition would be “No, English books are old”.]

Similarly we may represent the three similar Propositions “No y are x’”, “No y’ are x”, and “No y’ are x’”.

[The Reader should make out all these for himself. In the “books” example, these three Propositions would be “No English books are new", &c.]

We see that this one Diagram has now served to present no less than three Propositions, viz.

```
 -------
|(0)|   |
|---|---|
|   |   |        (1) "No xy exit;
 -------         (2)  No x are y;
                  (3)  No y are x."
```

Hence these three Propositions are equivalent.

[In the "books" example, these Propositions would be

(1) "No old English books exist;_(2) No old books are English;_(3) No English books are old".]

The two equivalent Propositions, "No x are y" and "No y are x", are said to be 'Converse' to each other.

[For example, if we were told to convert the Proposition "No porcupines are talkative", we should first choose our Univ. (say "animals"), and then complete the Proposition, by supplying the Substantive "animals" in the Predicate, so that it would be "No porcupines are talkative animals", and we should then convert it, by interchanging its Terms, so that it would be "No talkative animals are porcuoines".]

Similarly we may represent the three similar Trios of equivalent Propositions; the whole Set of four Trios being as follows:–

(1) "No xy exist" = "No x are y" = "No y are x".
(2) "No xy' exist" = "No x are y'" = "No y' are x".
(3) "No x'y exist" = "No x' are y" = "No y are x'".
(4) "No x'y' exist" = "No x' are y'" = "No y' are x'".

Let us take, next, the Proposition "All x are y".

We know (see p. 17) that this is a Double Proposition, and equivalent to the two Propositions "Some x are y" and "No x are y'", each of which we already know how to represent.

```
 -------
|(1)|(0)|
|---|---|
|   |   |
 -------
```

[Note that the Subject of the given Proposition settles which Half we are to use; and that is Predicate settles in which portion of that Half we are to place the Red Counter.]

```
                          TABLE I
 -----------------------------------------------------
|                |    -------   |              |    -------   |
|                |   |  (1)  |  |              |   |(0)|(0)|  |
| Some x exist   |   |---|---|  | No x exist   |   |---|---|  |
|                |   |   |   |  |              |   |   |   |  |
|                |    -------   |              |    -------   |
|----------------|--------------|--------------|--------------|
|                |    -------   |              |    -------   |
|                |   |   |   |  |              |   |   |   |  |
| Some x' exist  |   |---|---|  | No x' exist  |   |---|---|  |
|                |   |  (1)  |  |              |   |(0)|(0)|  |
|                |    -------   |              |    -------   |
|----------------|--------------|--------------|--------------|
|                |    -------   |              |    -------   |
|                |   |   |   |  |              |   |(0)|   |  |
| Some y exist   |   |(1)|---|  | No y exist   |   |---|---|  |
|                |   |   |   |  |              |   |(0)|   |  |
|                |    -------   |              |    -------   |
|----------------|--------------|--------------|--------------|
|                |    -------   |              |    -------   |
|                |   |   |   |  |              |   |   |(0)|  |
| Some y' exist  |   |---|(1)|  | No y' exist  |   |---|---|  |
|                |   |   |   |  |              |   |   |(0)|  |
|                |    -------   |              |    -------   |
 -----------------------------------------------------
```

Similarly we may represent the seven similar Propositions “All x are y’”, “All x’ are y”, “All x’ are y’”, “All y are x”, “All y are x’”, “All y’ are x”, and “All y’ are x’”.

```
Let us take, lastly, the Double Proposition "Some x are y
and some are y'", each part of which we already know how to
represent.
 -------
|(1)|(1)|
|---|---|
|   |   |
 -------
```

Similarly we may represent the three similar Propositions, “Some x’ are y and some are y’”, “Some y are x and some are x’”, “Some y’ are x and some are x’”.

The Reader should now get his genial friend to question him, severely, on these two Tables. The Inquisitor should have the Tables before him: but the Victim should have nothing but a blank Diagram, and the Counters with which he is to represent the various Propositions named by his friend, e.g. “Some y exist”, “No y’ are x”, “All x are y”, &c. &c.

```
                          TABLE III.

 ----------------------------------------------------------
|                  |   -------   |               |   -------|  |
| Some xy exist    |  |(1)|   |  |               |  |(1)|(0)|  |
|  =Some x are y   |  |---|---|  | All x are y   |  |---|---|  |
|  =Some y are x   |  |   |   |  |               |  |   |   |  |
|                  |   -------   |               |   -------   |
|------------------|-------------|---------------|-------------|
|                  |   -------   |               |   -------   |
| Some xy' exist   |  |   |(1)|  |               |  |(0)|(1)|  |
|  =Some x are y'  |  |---|---|  | All x are y'  |  |---|---|  |
|  =Some y' are x  |  |   |   |  |               |  |   |   |  |
|                  |   -------   |               |   -------   |
|------------------|-------------|---------------|-------------|
|                  |   -------   |               |   -------   |
| Some x'y exist   |  |   |   |  |               |  |   |   |  |
|  =Some x' are y  |  |---|---|  | All x' are y  |  |---|---|  |
|  =Some y are x'  |  |(1)|   |  |               |  |(1)|(0)|  |
|                  |   -------   |               |   -------   |
```

```
|-----------------|-----------|--------------|-----------|
|                 |  -------  |              |  -------  |
| Some x'y' exist | |   |   | |              | |   |   | |
|  =Some x' are y'| |---|---| | All x' are y'| |---|---| |
|  =Some y' are x'| |   |(1)| |              | |(0)|(1)| |
|                 |  -------  |              |  -------  |
|-----------------|-----------|--------------|-----------|
|                 |  -------  |              |  -------  |
| No xy exist     | |(0)|   | |              | |(1)|   | |
|  =No x are y    | |---|---| | All y are x  | |---|---| |
|  =No y are x    | |   |   | |              | |(0)|   | |
|                 |  -------  |              |  -------  |
|-----------------|-----------|--------------|-----------|
|                 |  -------  |              |  -------  |
| No xy' exist    | |   |(0)| |              | |(0)|   | |
|  =No x are y'   | |---|---| | All y are x' | |---|---| |
|  =No y' are x   | |   |   | |              | |(1)|   | |
|                 |  -------  |              |  -------  |
|-----------------|-----------|--------------|-----------|
|                 |  -------  |              |  -------  |
| No x'y exist    | |   |   | |              | |   |(1)| |
|  =No x' are y   | |---|---| | All y' are x | |---|---| |
|  =No y are x'   | |(0)|   | |              | |   |(0)| |
|                 |  -------  |              |  -------  |
|-----------------|-----------|--------------|-----------|
|                 |  -------  |              |  -------  |
| No x'y' exist   | |   |   | |              | |   |(0)| |
|  =No x' are y'  | |---|---| | All y' are x'| |---|---| |
|  =No y' are x'  | |   |(0)| |              | |   |(1)| |
|                 |  -------  |              |  -------  |
---------------------------------------------------------
---------------------------------------------------------
|                 |  -------  |              |  -------  |
|                 | |(1)|(1)| |              | |(1)|   | |
| Some x are y,   | |---|---| | Some y are x | |---|---| |
| and some are y' | |   |   | | and some are x'|(1)|   | |
|                 |  -------  |              |  -------  |
|-----------------|-----------|--------------|-----------|
|                 |  -------  |              |  -------  |
|                 | |   |   | |              | |   |(1)| |
| Some x' are y,  | |---|---| | Some y' are x| |---|---| |
| and some are y' | |(1)|(1)| | and some are x'|   |(1)| |
|                 |  -------  |              |  -------  |
----------------------------------------------------------
```